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EPA Superfund
Record of Decision:

KAUFFMAN & MINTEER, INC.
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RECORD OF DECISION

Kauffman & Minteer Superfund Site
Jobstown, Burlington County, New Jersey

United States Environmental Protection Agency
Region II
New York, New York

September, 1996

DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Kauffman & Minteer

Jobstown, Burlington County, New Jersey

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected remedial action for the Kauffman & Minteer Site, which was chosen in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act, as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan. This decision document explains the factual and legal basis for selecting the remedy.

The New Jersey Department of Environmental Protection (NJDEP) concurs with the selected remedy. This decision document is based on the administrative record file for this Site.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the Kauffman & Minteer Site, if not addressed by implementing the response Action selected in this Record of Decision, may present an imminent and substantial threat to public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy represents the first and only planned operable unit for the Kauffman & Minteer Site. It addresses contaminated lagoon sediments at the Site and the shallow groundwater. The major components of the selected remedy include the following:

! Excavation, off-site treatment as necessary, and off-site disposal of approximately 1000 cubic yards of sediments;

! Long-term monitoring of the contaminated shallow ground-water underlying the Site. It is anticipated that the groundwater monitoring will be conducted annually for at least five years. The frequency and need to continue monitoring will be reevaluated after this five year period; and

! Institutional controls to limit groundwater use in the Navesink Formation. (NJDEP will establish a Classification Exception Area which will restrict the use of the Navesink groundwater in the vicinity of the Site.)

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. The remedy utilizes permanent solutions and alternative treatment (or resource recovery) technologies to the maximum extent practicable. However, treatment of the principal threats at the Site was not found to be practicable, since the small volume of'sediments could not be treated in a cost-effective manner. Therefore, this remedy does not satisfy the statutory preference for remedies that employ treatment as their principal element.

Because this remedy will result in hazardous substances remaining on the Site above health-based levels, a review will be conducted within five years after commencement of the remedial action to ensure that it continues to provide adequate protection of human health and the environment.

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RECORD OF DECISION
DECISION SUMMARY

Kauffman & Minteer Site

Jobstown, Burlington County, New Jersey

United States Environmental Protection Agency
Region II
New York, New York

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SITE NAME, LOCATION, AND DESCRIPTION

The Kauffman & Minteer (K&M) Site is located on the eastern corner of the intersection of Monmouth Road (Route 537) and Jobstown-Juliustown Road in Jobstown, Springfield Township, Burlington County, New Jersey. Geographically, the Site is located at latitude 40° 021 10.811 N and longitude 74° 41' 37.5" W (USGS, 1957). Figure 1 shows the general location of the Site.

The K&M property occupies approximately 5.5 acres in a sparsely populated, predominantly rural area that primarily supports agriculture, horse farming, and related businesses. The K&M property is bordered on the north by residences and Route 537, on the northeast and east by a marsh area, on the south by an overgrown and wooded area traversed by Barker's Brook, and on the west by Jobstown-Juliustown Road. Boundaries of the K&M property and adjoining properties are shown on Figure 2.

A small marsh immediately adjacent to the eastern property boundary gives rise to an intermittent stream. This stream flows south-southeast into a branch of Barker's Brook which is located approximately 575 feet south of the K&M property.

Features of concern on the K&M property include a small (approximately 0.7 acre), irregularly shaped, unlined lagoon. The lagoon is approximately three to 10 feet deep and is surrounded by a low earthen berm. The lagoon, which formerly received wash water from the tank truck interiors, has been drained by the Environmental Protection Agency (EPA) and is currently inactive. Since being drained in the summer of 1991, the lagoon has been partially refilled due to precipitation. Also on the Site are ten under-ground storage tanks and a wash water collection pit that was filled by the site owner.

The Site area is not served by either sanitary or storm sewer systems. The K&M facility, like the surrounding residences and businesses, has a septic system to handle sanitary wastes. Storm water runoff in the Site area flows to Barker's Brook via drainage ditches and overland flow. A drainage ditch along the southwestern boundary of the K&M property, adjacent to Jobstown-Juliustown Road, carries runoff from the facility operations lot and parking areas to Barker's Brook.

In the area around the Site, individual domestic wells are the primary source of drinking water. Within three miles of the Site, primarily in the Juliustown area, approximately 560 people use water from private wells that tap the Wenonah-Mt. Laurel Aquifer. The nearest well drawing water from this aquifer is located upgradient of the Site on the north side of the intersection of Routes 670 and 537, approximately 500 feet from the K&M lagoon.

SITE HISTORY AND ENFORCEMENT ACTIVITIES

Kauffman & Minteer, Inc. operated an industrial transportation facility. The company provided transport services in company-owned tankers, carrying bulk luquids consiting primarily of organic substances including plasticizers, resins, vegetable oils, soaps, petroleum oils, and alcohols. From 1960 through at least 1981, wastewater generated from the washing of tanker interiors was discharged to the on-site lagoon.

The lagoon had no overflow diversion structure to protect the system from overflow during rainfall events. A spray aeration system, consisting of seven sprinklers located along the western side of the lagoon, was formerly used to evaporate wastewater by spraying it over the lagoon. Spray from this system was observed to be carried by the wind onto surrounding properties.

On June 2, 1978, and Administrative Order was issued to K&M by the New Jersey Department of Environmental Protection (NJDEP). The order required all existing lagoon water and process waters to be transported to an acceptable waste processing center, or alternatively, the waters were to be treated and discharged on site pursuant to the state treatment works approval requirements. In the spring of 1981, K&M reproted that the discharge of wastewater to the lagoon had stopped and that wastewater was being stored on the facility property in tank trailers.

K&M was issued a National Pollution discharge Elimination System (NPDES) Discharge Permit (No. NJ0032310) effective October 31, 1980 to October 31, 1985 by NJDEP to discharge surface runoff from the K&M facility to

Barker's Brook in accordance with effluent limitations. The permit conditions required K&M to submit a discharge monitoring report every twelve months.

On April 13, 1981, NJDEP preformed an inspection of the K&M facility and noted that the unlined, unpermitted lagoon surface was contaminated with oil, and the general area contained rusted drums and debris. The lagoon earthen berm was discolored by lagoon leachate. At the tank trailer wash-out area, potentially contaminated process water was being discharged into an unlined collection pit. Near the western boundary of the facility, a drainage ditch contained a straw filter berm that was used to remove oil and grease from parking lot runoff. Also, drums at the rear of the Site were leaking onto unprotected soils.

In April 1982, K&M began shipping wastewater off site to the DuPont Deepwater facility for disposal. The K&M wastewater shipments were manifested as waste water, nonhazardous, Department of Transportation (DOT) hazard class NA9189, EPA waste type X724. Water samples collected from the lagoon by the NJDEP Bureau of Waste Management showed concentrations of lead and cadmium above New Jersey hazardous waste criteria, qualifying the lagoon as a hazardous, waste facility. After the samples from the lagoon were identified as hazardous, the K&M NPDES permit was voided and all lagoon surface water was ordered to be removed and disposed in accordance with the waste regulations of NJDEP.

On April 21, a joint inspection of the Site was conducted by NJDEP Division of Water Resources and the Burlington County Health Department. During the inspection, Mr. Kauffman, the president of K&M Inc., indicated that the unlined collection pit next to the garage held tank trailer wash water until the wash water was transferred to a storage tank trailer for highway transport. In addition, Mr. Kauffman explained the use of two 1,000-gallon underground storage tanks; one was used to store waste crankcase oil and oil skimmed form the surface of the wash water collection pit, and the other was used to collect heels of shipments of a Monsanto plasticizer. The collected plasticizers were then shipped back to Monsanto for processing. Beginning in 1983, K&M wastewater was loaded into tank trailers and transported for treatment/disposal at the Mt. Holly Sewer Authority. The wash water collection pit was filled by Mr. Kauffman sometime between June 1989 and April 1990.

On June 1, 1984, the berm surrounding the lagoon broke and a portion of the lagoon contents was released to the adjacent marsh and downstream areas. The level of the lagoon dropped 18 inches before the berm could be repaired. In 1985, EPA conducted a Site investigation, which was used to evaluate the Site's eligibility for the Superfund National Priorities List (NPL). The Site was subsequently placed on the NPL on March 30, 1989.

In June 1989, EPA conducted an inspection at the Site and noted conditions similar to previous inspections, including stained soils adjacent to the lagoon, in the parking area, and in the drainage ditch area.

In April 1991, EPA performed a site inspection and noted that the Site was still active and tanker trailers continued to be washed down at the facility. Wastewater from the tanker washing operations was being collected in an unlined sump and continued to be transferred to tankers for transport to the Mt. Holly Sewer Authority for treatment and disposal.

A removal action was conducted by EPA from the summer through the fall of 1991. This action included the disposal of the liquid in the lagoon and the installation of a fence around the lagoon. Since that time, the lagoon has refilled due to precipitation. K&M ceased operations at the facility in 1992.

In the summer of 1995, a release of liquid contaminated with plasticizers from an on-site tank trailer prompted a second removal action. This subsequent removal action consisted of the collection and disposal of the contaminated material found in four on-site tank trailers and deteriorating drums that were left on the Site as a result of K&M's closure. The empty tank trailers were then demolished and disposed of. Shortly before EPA initiated this removal action, an assessment of the contents of ten underground storage tanks (USTs) by NJDEP resulted in the identifiction of two USTs containing hazardous substances, including phthalates. The other USTs were found to contain fuel oils only. Consequently, EPA removed the contents of these 2 USTs as part of the removal action.

Since the other 8 USTs contained fuel oil products only, EPA was precluded from taking action under Section 101 of CERCLA. However NJDEP plans to investigate these tanks to determine if any further remedial measures are warrented.

HIGHLIGHTS OF COMMUNITY PARTICIPATION

The Remedial Investigation report, Feasibility Study report, and the Proposed Plan for the Site were released to the public for comment on July 9, 1996. These documents were made available to the public in the administrative record file at the EPA Docket Room in Region II, 290 Broadway, New York, New York, and the information repository at the Springfield Township Municipal Hall, Jacksonville-Jobstown Road, Jobstown, New Jersey. The notice of availability for the above-referenced documents was published in the Burlington Times on July 9, 1996. The public comment period on these documents was held form July 9, 1996 to August 7, 1996.

On July 23, 1996, EPA conducted a public meeting at the Springfield Township Municipal Hall to inform local officials and interested citizens about the Superfund process, to discuss the findings of the RI, FS, and proposed remedial activities at the Site, and to respond to any questions from area residents and other attendees.

Responses to the comments received at the public meeting, and in writing during the public comment period, are included in the Responsiveness Summary section of this Record of Decision.

SCOPE AND ROLE OF RESPONSE ACTION

EPA will address all remaining risks at the Site in one response action or operable unit. This Record of Decision (ROD) addresses contaminated lagoon sediments and shallow groundwater at the Site. In addition, NJDEP plans to take further action to address the 8 USTs containing fuel oil products.

The primary goal of this remedial action is to reduce the risks to human health and the environment caused by the potential exposure to contaminated lagoon sediments. In addition, and area stained black from the overflow of the lagoon requires restoration because of the contaminant-stressed vegetation. Finally, this remedy includes actions to prevent exposure to contaminated groundwater at the Site.

SUMMARY OF SITE CHARACTERISTICS

A Remedial Investigation (RI) was preformed from 1991 to 1992 to determine the type and concentrations of contaminants in various media at and around the Site. The study was conducted for EPA by TAMs Consultants, Inc. The RI included sampling of site soils, sediment, surface water and ground water to delineate the nature and extent of contamination as a result of K&M activities at the Site. The results of the RI are summarized below:

Site Hydrology and Geology

The land surface in the general area of the Site slopes gently toward the west from more elevated areas northeast, east, and southeast of the Site. Barker's Brook, a major stream in Springfield Township, originates in the elevated areas east of the Site and flows west through much of Springfield Township. Topography in the immediate vicinity of the Site slopes generally south toward Barker's Brook and the drainage ditch that runs along Jobstown-Juliustown Road.

Two wetland areas were identified and mapped as part of the ecological investigation. One wetland (marsh area) is located northeast of the K&M property and extends from the lagoon northeast toward Saylor's Pond Road. The width of this wetland (northwest-southeast direction) ranges from about 250 to 300 feet, which is approximately the same as the length of the lagoon. This wetland occupies approximately 2.3 acres and is at a lower elevation than the surrounding topography. Drainage from the marsh area wetland is via an intermittent stream that flows southeast towards Barker's Brook. The channel of this intermittent stream fans out near its junction with Barker's Brook. A second wetland, approximately 2.5 acres in size, is located southeast of the K&M property and adjacent to Barker's Brook. It is connected to the marsh area wetland via the intermittent stream and extends from the drainage ditch along Jobstown-Juliustown Road in the southwest to the intermittent stream in the northeast.

There are four aquifers in the vicinity of the K&M Site. In order of decreasing depth, the aquifers are the Raritan-Magothy, the Englishtown, the Wenonah-Mt. Laurel, and the Navesink Marl Formation. These aquifers dip to the southeast and strike northeast-southwest. The Site rests on the Navesink Formation, a glauconitic, sandy clay layer, approximately 10 to 25 feet thick in the Site vicinity. The Navesink is th uppermost water-bearing unit found at the Site. However, due to its low and inconsistent yeilds to wells and poor water quality, it is normally not used for domestic well development. Below the Site and directly below the Navesink Formation is the Wenonah-Mt. Laurel Aquifer, which is approximately 60 feet thick. This aquifer is used for drinking water in the vicinity of the Site.

Nature and Extent of Contamination

Volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were the primary contaminants detected at the Site. The RI identified contaminants primarily in the lagoon sediments and in the shallow groundwater; the lagoon sediments being the source of contamination in the shallow aquifer.

Sediment samples were collected from six locations on the surface of the dewatered lagoon bed, including one boring through the lagoon bed for collection of subsurface samples, as shown in Figure 3. The predominant sediment contaminants and maximum concentrations detected, in parts per million (ppm), are: tetrachloroethylene (230), trichloroethylene (3,100), 1,1,1 trichloroethane (1,600), 1,2-dichloroethylene (1,100), 1,1-butylbenzylphthalate (31,000), di-n-octylphthalate (4,400). Based on the subsurface sampling, similar contaminants were detected but concentrations generally decreased with depth. Butylbenzylphthalate and di-n-octylphthalate were detected in the marsh soils adjacent to the lagoon, although at lower concentrations (maximum of 430 ppm and 480 ppm, respectively). Tables 1 and 2 contain a summary of the chemical data for the lagoon sediment and adjacent marsh soil.

As part of the RI, nine groundwater monitoring wells were installed at the Site, including six shallow monitoring wells and three deep wells. These wells augmented three existing monitoring wells (installed by NJDEP in 1981) at the Site. All twelve monitoring wells are shown in Figure 4. The predominant Navesink Formation (shallow) groundwater contaminants and the maximum concentrations detected, as compared to their respective Federal Safe Drinking Water Act Maximum Contaminant Levels (MCLs) denoted in parentheses, or as not available (NA), in parts per billion (ppb), are: VOCs – tetrachloroethylene: 4/(5), trichloroethylene: 16/(5), 1,2-dichloroethylene: 94 / (10), 1,1-dichloroethane: 4/(NA), benzene: 1/(5), isophorone: 570/ (NA), and vinyl chloride: 17/(2); Inorganics -- beryllium 3/(4), chromium: 22.7/(100), and vanadium: 56.1/(NA). The only potential contaminant of concern found in the Wenonah-Mt. Laurel (middle) Aquifer was chromium at a maximum concentration of 20.4 ppb (MCL is 100 ppb). Table 3 contains a summary of the groundwater data. Those compounds in the groundwater that exceed Federal and/or State drinking water standards are contained within the property boundaries. The estimated dimensions of the contaminated groundwater plume are: 200 feet wide by 200 feet long by 10 feet deep. Based on the available data, the plume is limited to the Site.

Sampling of residential drinking water wells was also conducted by EPA in 1990 and 1993. (NJDEP also sampled residential wells in the vicinity of the Site in 1988). There were no exceedances of any primary Federal or State drinking water standards during any of the sampling events.

Based on the on-site monitoring well data, which indicated that no contaminants found in the shallow aquifer were found in the underlying Wenonah-Mt. Laurel aquifer, coupled with the residential well sampling, it appears unlikely that the Wenonah Mt. Laurel is, or will be, impacted by contamination in the Navesink unless new wells are installed at or near the Site.

A total of thirty surface soil samples and seventeen subsurface soil samples were collected at locations throughout the Site, including the underground storage tank areas, the former washwater collection pit area and other unpaved soils. Soil sampling locations are shown on Figures 3 and 5. Tables 4, 5, 6, and 7 summarize the surface and subsurface soil sample results. Contaminants detected in site soils include butylbenzylphthalate and di-n-octylphthalate at maximum concentrations of 38 ppm and 65 ppm, respectively. The maximum concentrations were found in the soil in the area of the former wash water collection pit; lower levels were found in the other unpaved areas of the Site. No significant contamination was found in the soils around the underground storage tanks.

Seven surface water samples were collected from the sampling locations identified in Figure 4. Three samples were collected in the drainage ditch along the western site boundary, one sample was collected from the intermittent stream that runs from the marsh to Barker's brook, and three samples were collected from Barker's Brook. Table 8 summarizes the surface water sample results. No significant contamination was detected. Contaminants detected include butylbenzylphthalate at a maximum concentration of 2 ppb and di-n-octylphthalate at a maximum concentration of 140 ppb which did not exceed Federal or State surface water quality criteria.

Sediment samples were also collected from the drainage ditch and Barkers Brook, as shown on Figure 4. Results are summarized in Table 9. In general, no significant sediment contamination was detected in Barkers Brook. Contaminants detected include phthalates ranging form 63 to 960 ppb, including diethylphthalate, di-n-butylphthalate and di-n-octylphthalate. In the drainage ditch, butylbenzylphthalate and di-n-octylphthalate were detected at maximum concentrations of 2,300 and 1,900 ppm, respectively.

SUMMARY OF SITE RISKS

EPA conducted a baseline risk assessment to evaluate the potential risks to human health and the environment associated with the K&M Site in its current state. The following summarizes the results of the Risk Assessment.

The Risk Assessment focused on contaminants in the sediment, ground-water, surface water, and soils which are likely to pose significant risks to human health and the environment. The summary of the contaminants of concern (COC) in sampled media is listed in Tables 10 through 16. Tables 17 through 23 provide a statistical summary of the data for all media, including the frequency of detection, mean concentration, and the 95 percent Upper Confidence Limit (UCL).

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: Exposure Assessmet--estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed. Hazard Identification--contaminants of concern at the Site are identified based on several factors such as toxicity, frequency of occurrence, and concentration. Toxicity Assessment--determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse outputs of the exposure and toxicity assessments to provide a quantitiative (e.g., one-in-one-million excess cancer risk) assessment of site-related risks. The reasonable maximum exposure was evaluated.

The data collected during the RI were grouped by media corresponding to respective exposure pathways evaluated. The key media are: surface soils (0-2 feet), subsurface soils (greater than 2 feet), lagoon sediments, drainage ditch and intermittent stream sediments, drainage ditch and intermittent stream surface waters, marsh sediments, Barkers Brook sediments, Barkers Brook surface water, Navesink Marl groundwater (shallow groundwater wells), and Wenonah-Mt. Laurel groundwater (deep groundwater wells).

EPA's baseline risk assessment identified several potential exposure pathways by which the public may be exposed to contaminants at the Site under current and future land-use conditions. Under present use conditions, trespassers and site workers were evaluated for exposure to site soils and lagoon sediments. Specifically, trespassers were evaluated for an ingestion pathway, and workers were evaluated for both inhalation and ingestion routes. In addition, trespassers were evaluated for ingestion of sediments in the marsh, drainage ditch and intermittent stream.

Exposure to groundwater under the present use scenario were evaluated for nearby residents, trespassers, and site workers (under a combined current/future use scenario). Trespassers and residents were evaluated for inhalation of the Navesink groundwater, and all three groups were evaluated for ingestion of the Navesink and the Wenonah-Mt. Laurel groundwater.

Residential properties surround the Site, as the zoning in the immediate area of the Site is "Neighborhood

Commercial." K&M is a non-conforming business, in that it was established prior to the zoning restrictions. Now that facility operations have been discontinued, any future activities on the premises must conform to the zoning code. Due to the present zoning restrictions, there is a distinct likelihood that the Site would be used in the future for residential development. Therefore, the future use risk scenario assumes residents would be living on the Site and construction workers would be present on the Site as a result. Residents were evaluated for exposure to groundwater via ingestion and inhalation of the Navesink groundwater, and via ingestion of the Wenonah-Mt. Laurel drinking water aquifer. Construction workers were evaluated for ingestion of both the Navesink and the Wenonah-Mt. Laurel groundwater. Similarly, both groups were evaluated under the future use scenario for ingestion and inhalation of lagoon sediments and site soils.

In taking the most conservative approach, exposure via ingestion of water from the shallow groundwater (Navesink) was evaluated; however, a well search performed by EPA within a five mile radius of the Site revealed that no drinking water wells were installed in the Navesink. Unlike the Wenonah-Mt. Laurel (middle aquifer), the relatively low permeability, and naturally occurring high levels of iron and manganese, significantly limit the use of the Navesink Marl Formation as a drinking water source. Additionally, sampling of nearby residential wells did not detect any contaminants above health-based levels. Although the Navesink Formation could be a potential source of public water supply for household purposes, there are no wells registered with the NJDEP that draw from the Navesink Formation. The higher transmissivity, greater hydraulic conductivity, and better water quality of the Wenonah-Mt. Laurel Aquifer make drilling to a greater depth cost effective. A site inspection did reveal two shallow residential wells, one upgradient and one sidegradient to the Site; however, the wells are not used for drinking or bathing purposes.

Under current EPA guidelines, the likelihood of carcinogenic (cancer-causing) and noncarcinogenic effects due to exposure to site chemicals are considered separately. It was assumed that the toxic effects of the site-related chemicals would be additive. Thus, carcinogenic and noncarcinogenic risks associated with exposures to individual compounds of concern were summed to indicate the potential risks associated with mixtures of potential carcinogens and noncarcinogens, respectively.

Noncarcinogenic risks were assessed using a hazard index (HI) approach, based on a comparison of expected contaminant intakes and safe levels of intake (Reference Doses). Reference doses (RFDs) have been developed by EPA for indicating the potential for adverse health effects. RfDs, which are expressed in units of milligrams per kilogram per day (mg/kg-day), are estimates of daily exposure levels for humans which are thought to be safe over a lifetime (including sensitive individuals). Estimated intakes of chemicals from environmental media (e.g., the amount of a chemical ingested from contaminated drinking water) are compared to the RfD to derive the hazard quotient for the contaminant in the particular medium. The HI is obtained by adding the hazard quotients for all compounds within a particular medium that impact a particular receptor population.

An HI greater than 1.0 indicates that the potential exists for noncarcinogenic health effects to occur as a result of site-related exposures. The HI provides a use ful reference point for guaging the potential significance of multiple contaminant exposures within a single medium or across media. The toxicity values, including reference doses, for the compounds of concern at the Site are presented in Tables 24 and 25. A summary of the noncarcinogenic risks associated with these chemicals for each exposure pathway is contained in Tables 26 through 29.

As can be seen from Tables 26 through 29, in the future use scenario, ingestion of lagoon sediments by a child results in an estimated HI of 7.0, and inhalation of lagoon sediments results in HIs of 2.0 for an adult resident and 9.4 for a child. The present and future scenario of inhalation of lagoon sediments by a site worker resulted in an HI of 1.3. The remaining exposure pathways showed non-carcinogenic risks of less than 1.0. The noncarcinogenic risk was attributable to butylbenzylphthalate and di-n-octylphthalate.

Potential carcinogenic risks were evaluated using the cancer slope factors developed by EPA for the contaminants of concern. Cancer slope factors (SFs) have been developed by EPA's Carcinogenic Risk Assessment Verification endeavor for estimating excess lifetime cancer risks associated with exposure to potentially carcinogenic chemicals. Sfs, which are expressed in units of (mg/kg-day) -1, are multiplied by the estimated intake of a potential carcinogen, in mg/kg-day, to generate an upper-bound estimate of the excess lifetime cancer risk associated with exposure to the compound at that intake level. The term "upper bound" reflects the conservative estimate of the risks calculated from the SF. Use of this approach makes the underestimation of the risk highly unlikely. The SFs for the compounds of concern are presented in Table 25. A summary of the carcinogenic risks associated with these chemicals for each exposure pathway is contained in Tables 26 through 29.

For known or suspected carcinogens, EPA considers excess upper-bound individual lifetime cancer risks of between 10-4 to 10-6 to be acceptable. This level indicates that an individual has not greater than approximately a one in ten thousand to one in a million chance of developing cancer as a result of site-related exposure to a carcinogen over a 70-year period under specific exposure conditions at a Site.

As can be seen from Table 26 through 29, in the current use scenario, residents are estimated to have an excess cancer risk of 3.2 x 10-4, and site workers a risk of 1.9 x 10-4 from ingestion of the shallow groundwater, due primarily to vinyl chloride. These risk numbers can be interpreted to mean that 3.2 out of 10,000 people, or 1.9 out of 10,000 for site workers, would be at an excess risk of developing cancers due to regular exposure to shallow groundwater during their lifetime. These risks are near the upper bounds of EPA's acceptable risk range. However, as stated above, the baseline risk assessment conservatively analyzed exposure to shallow groundwater, although the Navesink Marl Formation is not used as a drinking water source. All other pathways are within the guidelines for acceptable exposure to carcinogens.

Subsequent to the completion of the RI, it was found that provisional slope factors and Reference Doses for trichloroethylene and tetrachloroethylene were not considered in the analysis. The RI states that these chemicals could not be evaluated quantitatively because of the absence of slope factor. However, provisional slope factors are now available. Consequently, calculations of the risks from these chemicals have been developed. Based on these calculations, the calculated carcinogenic risks for exposure to groundwater for the current residents increased slightly from 3.2 x 10-4 to 3.3 x 10-4 and the risks for site workers increased from 1.9 x 10-4 to 1.93 x 10-4. For the future risks, the non carcinogenic risks to resident adults form lagoon sediment ingestion increased from 0.75 to 1.45 and the risks to children increased from 7.0 to 13.6. Calculations were developed for high end and central tendency inhalation exposures from lagoon sediment volatiles and the risks were 5.5 x 10-3 and 1.1 x 10-3, respectively.

In summary, the scenarios which exceeded guidelines for acceptable human exposure were a future use scenario of adult residents and their children living on the Site, ingesting or inhaling noncarcinogenic and carcinogenic contaminants in the lagoon sediments. In addition, the scenario of residents and site workers currently drinking the Navesink groundwater had associated carcinogenic risks at the upper bounds of EPA's acceptable risk range, although no exposure is occurring, or likely to occur, under this scenario.

While there is currently not a complete pathway for ingestion of the lagoon sediment, this situation will likely change in the future. As mentioned above, the Site is zoned Neighborhood Commercial, which would allow the property to be used for residences or light commerce. Whether the Site is used for residential or light commerce, it is likely that the lagoon would be disturbed which could result in the sediments being raised to the surface. With the sediments being raised to the surface, there will be a complete pathway for ingestion which would then pose an unacceptable risk. In addition to the sediment posing a potential unacceptable ingestion risk, it also acts as a continuous source of contamination to the upper aquifer.

Ecological Risk Assessment

An environmental assessment was performed to identify and estimate the actual and/or potential adverse ecological impacts of contaminants released by the K&M Site. A four-step process, very similar to that used in human health assessment, was utilized. It consists of: Problem Formulation - a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. Exposure Assessment - a quantitative evaluation of contaminant release, migration and fate; characterization of exposure pathways and receptors; and measurement of estimation of exposure point concentrations. Ecological Effects Assessment - literature reviews, field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. Risk Characterization - measurement or estimation of both current and future adverse effects. Unlike the Human Health Risk Assessment, the science of Environmental Assessment has not evolved to the point where standard risk calculations can be made. Risk Characterization is primarily the process of comparing the results of the Exposure Assessment with the results of the Known Ecological Effects assessment.

Potential risks to the environmental receptors associated with the K&M Site were identified in the ecological risk assessment. Based upon: 1) the baseline information gathered during the field investigation, 2) review of available data and literature, and 3) a comparison of the levels of site contamination to available toxicity data, there appear to be no contaminant-related impacts on the immediate aquatic and terrestrial ecosystems.

The study area of the K&M Site has four primary ecological features or community types: open field, riparian woodlands, marsh, and stream. Appropriate media for each were analyzed - i.e., respectively, surficial soils (0-2 feet), and composite soil samples from depths greater than 2 feet, surface water and sediment from Barker's Brook, and sediment and soil from the adjacent marsh along the eastern portion of the Site. The ecological risk assessment evaluated the contaminants of concern associated with each medium/community type, and with the biota (plants and animals) of each. For the open field habitats, the soil-borne contaminants list was comprised of phthalate, and di-n-octylphthalate) and lead. The contaminants in the marsh sediments were phthalates, chromium, and lead. The Barker's Brook sediments revealed contaminants of concern - phthalates and chromium; the surface water of the brook was eliminated as a medium of environmental exposure on the basis that no contamination was detected above New Jersey Surface Water Quality Criteria (NJSWQC).

The only contaminant-related ecological impact observed was to some flora in the lagoon-fed marsh. This stressed area was an isolated section adjacent to the lagoon. Obvious signs of phytotoxicity and adverse impacts were yellow, withered vegetation, and vegetation stained black form the overflow of lagoon contents. Recent site inspections indicate that the majority of the marsh area vegetation has recovered; only the black-stained area immediately adjacent to the lagoon still exhibits contaminant-related stress to the flora ecosystem. The flora in the remainder of the study area appeared healthy and exhibited a species composition indicative of similar habitats elsewhere. There were no obvious physical abnormalities observed in the fauna of the study area either, including numerous frogs found in the stressed area of the marsh. The study area contained birds, mammals and herpetofauna species that were representative of each habitat type. Additionally, the assemblage of organisms in Barker's Brook adjacent to, upstream, and down-stream of the K&M facility were typical for the habitat type. The potential impacts of contaminant exposure on local biota were assessed based upon a review of available criteria and the relevant literature. The primary sources for this information were: EPA Water Quality Criteria and literature compiled by the National Oceanographic and Atmospheric Administration (NOAA). Detailed information on the potential ecological effects of the COCs is contained in Section 7 of the RI. Detailed information on the ecological assessment is contained in Appendix G of the RI.

With the exception of stressed flora immediately adjacent to the lagoon, there appear to be no adverse ecological impacts related to the Site. As discussed below, a remedial action for the lagoon sediments would include restoration of the adjacent area of stressed vegetation.

Consequently, actual or threatened releases of hazardous substances from the K&M Site, if not addressed by implementing the response action selected in this Record of Decision, may present a current or potential to public health, welfare or the environment.

Uncertainties

The procedures and inputs used to assess risks in this evaluation, as in all such assessments, are subject to a wide variety of uncertainties. In general, the main sources of uncertainty include:

! environmental chemistry sampling and analysis
! environmental parameter measurement
! fate and transport modeling
! exposure parameter estimation
! toxicological data

Uncertainty in environmental sampling arises in part from the potentially uneven distribution of chemicals in the media sampled. Consequently, there is significant uncertainty as to the actual levels present. Environmental chemistry-analysis error can stem from several sources, including the errors inherent in the analytical methods and characteristics of the matrix being sampled.

Uncertainties in the exposure assessment are related to estimates of how often an individual would actually come in contact with the chemicals of concern, the period of time over which such exposure would occur, and in the models used to estimate the concentrations of the chemicals of concern at the point of exposure.

Uncertainties in toxicological data occur in extrapolating both from animals to humans and from high to low doses of exposure, as well as from the difficulties in assessing the toxicity of a mixture of chemicals. Unidentified contaminants and tentatively identified compounds (TICs) detected at the Site serve as additional sources of uncertainty. These uncertainties are addressed by making conservative asusmptions concerning risk and exposure parameters throughout the assessment. As a result, the Risk Assessment provides upper-bound estimates of the risks to populations near the Site, and is highly unlikely to underestimate actual risks related to the Site.

More specific information concerning public health and environmental risks, including a quantitative evaluation of the degree of risk associated with various exposure pathways, is presented in Sections 6 and 7 of the RI Report.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on available information and standards such as applicable or relevant and appropriate requirements (ARARs), and risk-based levels established in the risk assessment.

Based upon the results of the Risk Assessment, the estimated carcinogenic risks are within EPA guidlines (10-4 to 10-6) for all pathways except for ingestion of Navesink groundwater and inhalation of lagoon sediments. Exposure to noncarcinogens exceeds the guideline for acceptable exposure, (HI<=1.0), due to ingestion and inhalation of lagoon sediments. Therefore, evaluation of remedial alternatives for the Navesink groundwater and lagoon sediments is warranted.

Additionally, an area stained black from the overflow of the lagoon requires restoration because of the contaminant-stressed vegetation. In light of the fact that this area is immediately adjacent to the lagoon, remedial alternatives for this area will be evaluated along with the lagoon sediments.

There were also sediments in the drainage ditch with elevated levels of site-related contaminants. Therefore, if additional sampling shows sediments exceeding EPA's cleanup criteria for the contaminants of concern, these sediments will be excavated and backfilled with compatible soils.

Soil exposure pathways are all within EPA guidelines for acceptable exposure to carcinogens and noncarcinogens. Remedial alternatives for the site soils will therefore not be addressed.

In summary, the following remedial action objectives were established:

! Prevent exposure through ingestion and inhalation of contaminated lagoon and drainage ditch sediments;

! Restore an area of contaminant-stressed vegetation immediately adjacent to the lagoon;

! Prevent further degradation of the groundwater by removing the sediments, which pose a continuing source of contamination; and

! Prevent exposure through ingestion of on-site contaminated groundwater.

EPA has developed site-specific, risk-based remediation goals for the K&M Site for the following chemicals based on the protection of human health:

1,2-Dichloroethene(total)	700 ppm
Butylbenzylphthalate	16,000 ppm
Di-N-octylphthalate	1,600 ppm
Trichloroethene	5 ppm
Tetrachloroethene	11 ppm
Toluene	650 ppm

The remediation goals were based on the assumption that future land use will be residential. The goals for 1,2-Dichloroethene(total), Butylbenzylphthalate, and Di-N-octylphthalate were based on potential ingestion of sediments by future residents, and would decrease potential noncarcinogenic risks to a Hazard Quotient of 1 for each chemical. These goals would be applied to both surface and subsurface sediments based on the possibility that subsurface sediments may be brought to the surface during redevelopment of the Site.

The goals for Trichloroethene, Tetrachloroethene and Toluene were based on recommendations in EPA's soil screening level guidance issued in July 1996. The levels were based on potential inhalation of volatiles from the lagoon sediments. For Trichloroethene and Tetrachloroethene these goals would reduce carcinogenic risk to the 10-6 level, and for Toluene, reduces the noncarcinogenic risk to a Hazard Quotient of 1. These inhalation goals would be applied to surface sediments only.

NJDEP has developed soil cleanup guidelines designed to protect groundwater resources and has requested that the lagoon sediments be remediated consistent with its Proposed Cleanup Standards for Contaminated Sites (February 1992). It is likely that excavation of the lagoon sediments will include removal of some underlying soils, and based on the lagoon characterization in the RI, it is likely that residual contamination will not exceed NJDEP guidelines. EPA will ensure that any residual soil contamination does not impair the designated uses of the groundwater, which may include developing alternate soil cleanup goals.

In order to develop cost estimates for the remedial alternatives, it was estimated that the volume of sediments requiring remediation, including those adjacent to the lagoon and in the drainage ditch, is approximately 1000 cubic yards. This approach is believed to be conservative; actual sediment volume is likely to be lower.

DESCRIPTION OF REMEDIAL ALTERNATIVES

The Comprehensive Environmental Response, Compensation, and Liability Act, as amended (CERCLA) , requires that each selected site remedy be protective of human health and the environment, be cost effective, comply with other statutory laws, and utilize permanent solutions, alternative treatment technologies, and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

The FS report evaluated, in detail, four remedial alternatives to address the contamination associated with the lagoon sediments, and three remedial alternatives to address the contamination associated with on-site groundwater.

The estimated construction time reflects only the time required to implement the remedy and does not include the time required to design the remedy or procure contracts for design and construction.

These alternatives are:

LAGOON SEDIMENT ALTERNATIVES

Alternative LS-1: No Action

Estimated Capital Cost:	$0
Estimated Annual O&M Cost:	$0
Estimated 5 Year Review Cost:	$36,500
Estimated Present Worth:	$102,000

Estimated Construction Time: None

The Superfund program requires the evaluation of a No Action alternative to serve as a baseline for comparison with other remedial action alternatives. The No Action alternative for the lagoon sediments would allow the Site to remain in its present condition. Because this alternative would result in contaminants remaining on Site, CERCLA requires that the Site be reviewed at least every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes. No other action is proposed under this alternative.

Alternative LS-2: Cap/Cover

Estimated Capital Cost: $760,000
Estimated Annual O&M: $1,000
Estimated 5 Year Review Cost: $7,200
Estimated Present Worth: $796,000
Estimated Construction Time: three months

This alternative would require the dewatering of the lagoon, filling and regrading to meet the surrounding topography, and the installation of a cap or cover. Approximately 31,000 square feet of contaminated lagoon sediment area would be capped. This alternative would require some form of deed restrictions to ensure the integrity of the capped area. The three options considered for this alternative are:

Option 2a: Vegetative Cover
Option 2b: Asphalt/Concrete Cap
Option 2c: RCRA Cap

An asphalt cap on the lagoon has been used for costing purposes; however, any of the capping alternatives would be similar in cost because of the small surface area involved. A complete breakdown of costs for each option can be found in Appendix B of the FS. A vegetative cover would be used on the area of contaminant-stressed vegetation immediately adjacent to the lagoon. Because this alternative would result in contaminants remaining on Site above health-based levels, CERCLA requires that the Site be 'reviewed every five years.

Alternative LS-3:   Excavation/Off-Site Treatment of   Hot Spots/Off-Site Disposal

Estimated Capital Cost: $1,294,000
Estimated Annual O&M: $0
Estimated S Year Review Cost: $0
Estimated Present Worth: $1,294,000
Estimated Construction Time: four months

As with Alternative LS-2, this alternative would require dewatering of the lagoon. The lagoon sediments and berm soils, contaminated with COCs (approximately 1000 cubic yards) would be then excavated and disposed off site. Sampling during the RI indicates the likelihood that hot spots of contamination, defined as areas exceeding Resource Conservation and Recovery Act (RCRA) limits for characteristic hazardous waste, exist within the lagoon sediments. RCRA hazardous wastes would require disposal at a RCRA Subtitle C landfill. As a conservative costing measure, it was assumed that any lagoon sediments found to contain RCRA hazardous wastes would be incinerated, with the remaining ash being disposed of in a RCRA. Subtitle C landfill, and those sediments found to be non-hazardous would be disposed off site in a RCRA Subtitle D landfill. For cost purposes it was assumed that 85 percent of the sediment volume would be non-hazardous. All excavated areas would be backfilled with suitable fill, regraded and reseeded. The area of contaminant-stressed vegetation immediately adjacent to the lagoon would be excavated, backfilled with compatible soils and at a grade that will preserve a wetland hydrogeology and support wetland vegetation, and reseeded. In addition, any sediments found in the drainage ditch that exceed the cleanup criteria for the contaminants of concern would be excavated and disposed of, and the area backfilled with compatible soils.

Alternative LS-4:   Excavation/Off-Site Incineration/ Off-Site Disposal

Estimated Capital Cost: $2,454,000
Estimated Annual O&M: $0
Estimated 5 Year Review Cost: $0
Estimated Present Worth: $2,454,000
Estimated Construction Time: three months

As with Alternative LS-2 and LS-3, a total of approximately 1000 cubic yards of organic contaminated lagoon sediments would be excavated, packed in drums, and transported to a RCRA permitted incineration and disposal facility. The lagoon sediments would be incinerated and appropriately disposed of off site. Incineration is a thermal process that destroys all forms of combustible waste materials. All excavated areas would be filled with clean soil and graded. As with the other alternatives, the area of contaminant-stressed vegetation immediately adjacent to the lagoon would be excavated and backfilled with compatible soils and at a grade that will preserve a wetland hydrogeology and support wetland vegetation. Any sediments found in the drainage ditch that exceed the cleanup criteria for the contaminants of concern will be excavated and disposed of, and the area backfilled with compatible soils.

SHALLOW GROUNDWATER ALTERNATIVES

Alternative GW-1: No Action

Estimated Capital Cost: $0
Estimated Annual O&M: $0
Estimated 5 Year Review Cost: $36,500
Estimated Present Worth: $102,000
Estimated Construction Time: None

The Superfund Program requires the evaluation of a No Action alternative to serve as a baseline for comparison with other remedial action alternatives. The No Action alternative for the shallow groundwater would allow the Site to remain in its present condition. Because this alternative would result in contaminants remaining on site above health-based levels, CERCLA requires that the Site be reviewed at least every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes. No other action is proposed under this alternative.

Alternative GW-2: Limited Action

Estimated Capital Cost: $27,300
Estimated Annual O&M: $29,000
Estimated 5 Year Review Cost: $7,200
Estimated Present Worth: $499,000
Estimated Construction Time: one month

The limited action alternative for the contaminated shallow groundwater underlying the Site would include a long-term monitoring program, and an institutional control program. The monitoring program would include the installation of an additional well, and the sampling of all existing and new wells on a periodic basis. For conservative cost purposes, groundwater monitoring over a thirty-year period was evaluated. However, the need for continued groundwater monitoring would be reevaluated after five years. If, in the future, the monitoring program detects an exposure to contamination from the Site in excess of drinking water standards, additional remedial action would be considered. The institutional control program would consist of NJDEP placing well restrictions on the use of shallow wells in the immediate vicinity of the Site.

Alternative GW-3: Collection and Treatment

Estimated Capital Cost: $2,804,000
Estimated Annual O&M: $370,000
Estimated 5 Year Review Cost: $36,SOO
Estimated Present Worth: $8,415,000
Estimated Construction Time: two years

This alternative would provide for on-site collection and treatment of contaminated groundwater. Collection of groundwater would be accomplished through the installation of trenches along the downgradient portion of the property. Three cleanup processes would be necessary to treat the Navesink Formation groundwater: pretreatment to reduce scaling or fouling, organic compound removal, and inorganics removal. The treatment system required for these procedures would consist of: 1) Chemical Precipitation and Settling, 2) UV Oxidation, and 3) Ion Exchange. Groundwater would need to be treated to meet both New Jersey Surface Water Quality Criteria and Federal and State drinking water standards (MCLs) prior to surface water discharge.

SUMMARY OF COMPARATIVE ANALYSIS OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative was assessed utilizing nine evaluation criteria as set forth in the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) and Office of Solid Waste and Emergency Response (OSWER) Directive 9355.3-01. These criteria were developed to address the requirements of Section 121 of CERCLA to ensure all important considerations are factored into remedy selection decisions.

The following "threshold" criteria are the most important, and must be satisfied by any alternative in order to be eligible for selection:

Threshold Criteria

1. Overall Protection of Human Health and the Environment addresses whether or not an alternative provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

2. Compliance with Applicable and Relevant and Appropriate Requirements (ARARs) addresses whether or not an alternative will meet all of the ARARs of the Federal and State environmental statutes or provide a basis for invoking a waiver.

The following "primary balancing" criteria are used to make comparisons and to-identify the major trade-offs between alternatives:

Primary Balancing Criteria

3. Long-term Effectiveness and Permanence refers to the magnitude of residual risk and the ability of an alternative to maintain reliable protection of human health and the environment over time once remedial objectives have been met.

4. Reduction of Toxicity, Mobility, or Volume addresses the statutory preference for selecting remedial actions that employ treatment technologies that permanently and significantly reduce toxicity, mobility, or volume of the hazardous substances as a principal element.

5. Short-term Effectiveness refers to the period of time that is needed to achieve protection, as well as the alternative's potential to create adverse impacts on human health and the environment that may result during the construction and implementation period.

6. Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular alternative.

7. Cost includes estimated capital and operation and maintenance costs, and the present worth costs.

The following 'modifying" criteria are considered fully after the formal public comment period on the Proposed Plan is complete:

Modifying Criteria

8. State acceptance indicates whether, based on its review of the RI and FS reports and the Proposed Plan,

the State supports, opposes, and/or has identified any reservations with the preferred alternative.

9. Community acceptance refers to the public's general response to the alternatives described in the Proposed Plan and the RI and FS reports - Responses to public comments are addressed in the Responsiveness Summary of this Record of Decision.

A comparative analysis of these alternatives, based upon the evaluation criteria noted above, is presented below.

- Overall Protection of Human Health and the Environment

Sediment Alternatives

The No Action Alternative (LS-1) would not limit or prevent exposure to the contaminated lagoon sediments. In addition, there would still be the potential for continued degradation of the underlying groundwater. Therefore, this alternative would not provide adequate overall protection of human health and the environment. Alternative LS-2 would prevent exposure to the lagoon sediments through the use of a cap or cover. While capping would offer adequate protection of human health, future threats to the environment would remain since the contaminants would remain beneath the cap. Alternative LS-2 would offer better overall protection of human health and the environment than LS-1. The excavation and off-site treatment, alternatives, LS-3 and LS-4, would totally eliminate any potential future exposure by removal of the contaminants. Alternatives LS-2, LS-3 and LS-4 would achieve protectiveness at the completion of construction.

Groundwater Alternatives

Although no current exposure to contaminated groundwater is occurring, future exposure is possible. Alternative GW-1 does not incorporate any remedial action. A five-year review would involve sampling and analysis of existing groundwater monitoring wells. Therefore, Alternative GW-1 would provide some limited protection of human health. Alternative GW-2 involves a groundwater monitoring program and incorporates well restrictions. If, during the groundwater monitoring, contaminated groundwater is found to be migrating to a drinking water source, or towards a surface water body, the need for remedial action would be reconsidered. Alternative GW-2, in comparison to GW-1, would more effectively ensure the overall protection of human health, because it includes regular groundwater monitoring. Alternative GW-3, through pumping and treating contaminated groundwater, would offer an increased level of overall protection of human health and the environment compared to GW-1 and GW-2, because it would involve active remedial measures to restore the groundwater to federal and state standards.

- Compliance with ARARs

Sediment Alternatives

There are no contaminant-specific ARARs for the lagoon sediments. However, EPA did develop site-specific cleanup goals. Alternative LS-1 would not achieve the health-based cleanup goals for the lagoon sediments. The cap in Alternative LS-2 would prevent exposure to lagoon sediments, and therefore would satisfy the remedial action objective. The cap in Alternative LS-2(c) would meet the requirements for a RCRA hazardous waste cap. Alternatives LS-3 and LS-4 would achieve the remedial action objectives by removal of the sediments to meet the cleanup goals. Excavation activities conducted under Alternative LS-3 and LS-4 would be conducted in accordance with OSHA requirements and federal and state air emission regulations. These alternatives would also comply with RCRA requirements appropriate for off-site treatment and disposal of the sediments, as well as New Jersey hazardous waste regulations. For Alternatives LS-2, LS-3 and LS-4 the restoration of stressed vegetation adjacent to the lagoon would comply with applicable wetlands regulations, including Executive Order 11990 of the Clean Water Act and New Jersey Freshwater Wetlands Protection regulations.

A Stage IA Cultural Resource Survey was conducted during the RI to determine the need for compliance with the National Historic Preservation Act. Although the survey concluded that there is a potential for the presence of historical resources, in the vicinity of the Site, the lagoon area subject to remediation has already been heavily disturbed. Therefore a stage IB cultural resources survey would not be necessary component of any of the sediment alternatives.

Groundwater Alternatives

Although Alternative GW-1 would not accomplish the remedial action objective for the groundwater, there is no current exposure to contaminated groundwater, as the shallow aquifer is not used for potable water. Therefore, contaminant-specific ARARs (MCLs) are not applicable but could be considered relevant and appropriate. It is anticipated that after remediation of the lagoon sediments, groundwater quality standards will eventually be achieved through natural attenuation of contaminants, although the time frame is difficult to predict. Alternative GW-2 would effectively ensure the prevention of exposure to contaminated groundwater through a more comprehensive groundwater monitoring program consistent with Federal and State groundwater monitoring requirements and well restrictions. However, as with Alternative GW-1, it is difficult to predict when groundwater quality standards will be achieved in the shallow aquifer. Alternative GW-3 would treat the groundwater until federal and state groundwater standards are attained within the aquifer; ARARs for extraction and treatment prior to discharge would also be met.

! Long-term Effectiveness

Sediment Alternatives

Alternative LS-1 would not maintain reliable protection of human health and the environment over time, as contaminated sediments would remain in the lagoon. Alternative LS-2 would provide acceptable reduction in risk, however, hazardous substances would remain on Site, relying on long-term maintenance of the cap to preserve its protectiveness. With this alternative, deed restrictions would be required to ensure the integrity of the cap.

Alternatives LS-3 and LS-4 would involve the removal and off-site disposal of the contaminated lagoon sediments, and therefore, would provide the best long-term effectiveness. Removal of contaminated sediments would eliminate the lagoon as a source of future contamination. These two alternatives would be considered permanent solutions. Since public health and environmental risks associated with contaminated sediments would be eliminated, unrestricted future site use would be allowed.

Groundwater Alternatives

Although contaminant levels in the shallow groundwater are above MCLs, they are expected to gradually reduce, through natural attenuation, to health-based levels. Therefore, Alternatives GW-1 and GW-2 would eventually provide adequate long-term protectiveness. Alternative GW-2 incorporates a more comprehensive monitoring program, and therefore, would more reliably ensure protectiveness of human health, over the long term, than Alternative GW-1. Alternative GW-3 would be consistent with the long-term effectiveness goals for the Site by treating the groundwater until MCLs are achieved, or it becomes technically infeasible to attain remediation goals.

! Reduction in Toxicity, Mobility. or Volume

Sediment Alternatives

Alternative LS-1 would not achieve any reduction in toxicity, mobility or volume of the lagoon sediments. Alternative LS-2 would result in a reduction in mobility of the COCs in the lagoon sediments, but would not reduce toxicity or volume. Capping would significantly reduce infiltration of runoff through the lagoon sediments, transport of lagoon sediments via surface runoff, and volatilization of COCs in the lagoon sediments. Alternatives LS-3 and LS-4 would completely reduce the toxicity, mobility and volume of the COCs in the lagoon sediments, by removal, treatment, as necessary, and off-site disposal.

Groundwater Alternatives

Alternatives GW-1 and GW-2 would, over time, achieve reductions in toxicity and volume of the low levels of COCs in the groundwater through natural attenuation. Alternative GW-3 would reduce the toxicity, mobility and volume of the COCs in the groundwater through active treatment in a shorter period of time.

- Short-term Effectiveness

Sediment Alternatives

Alternative LS-1 would not have any adverse short-term impacts, since it involves no active remedial measures. Alternatives LS-2, LS-3 and LS-4 would involve disturbing the lagoon sediments to varying degrees, which would generate dust and volatile emissions. Alternative LS-2 would create the least disturbance of the sediments and fewest short-term impacts during construction of the cap. The excavation activities in Alternatives LS-3 and LS-4 would have the most short-term adverse effects. These alternatives may require air monitoring and engineering controls to reduce airborne dust and emissions. All of the lagoon sediment alternatives would require implementation of a health and safety plan to minimize any risks to on-site workers and nearby residents.

In terms of time to achieve protectiveness, Alternative LS-1 is the fastest to implement, as it involves no active remedial measures. Alternatives LS-2, LS-3, and LS-4 could all be implemented relatively quickly; construction times range from 3 to 4 months.

Groundwater Alternatives

Alternative GW-1 would not have any adverse short-term impacts. Alternative GW-2 would have minimal short-term impacts associated with the installation and sampling of a monitoring well. Alternative GW-3 would have the greatest short-term impacts, namely hazards associated with the extraction, treatment, and disposal of contaminated groundwater. Alternatives GW-2 and GW-3 would require the implementation of a health and safety plan to minimize the associated short-term risks.

In terms of time to achieve protectiveness for the groundwater component, Alternatives GW-1 and GW-2 could both be implemented almost immediately. Conversely, Alternative GW-3 involves construction of a groundwater extraction and treatment system, estimated to take at least 2 years to implement.

- Implementability

Sediment Alternatives

The technical and administrative feasibility of implementing Alternative LS-1 is minimal. The only activity conducted under Alternative LS-1 would be the required five-year review. Cap or cover construction, in Alternative LS-2, can be easily implemented using readily available technology and is not expected to involve any technical difficulties. Similarly, Alternatives LS-3 and LS-4 also incorporate easily implementable technologies. Alternative LS-4 may experience more administrative difficulty than LS-3 due to the potentially limited availability for off-site hazardous waste incineration capacity.

Groundwater Alternatives

The technical and administrative feasibility of implementing Alternative GW-1 is minimal. The only activity conducted under Alternative GW-1 would be the required five year reviews. Administratively, Alternative GW-2 would require NJDEP to implement well restrictions for the shallow aquifer in the vicinity of the Site. Alternative GW-3 would be more complex in its technical and administrative implementation than GW-1 and GW-2. On a technical level, it may be difficult to extract shallow groundwater for treatment, due to the low hydraulic conductivity in the Navesink Formation. In addition, administratively, Alternative GW-3 is more difficult to implement than the other two Alternatives; it would have to be conducted in accordance with substantive requirements of various state permits for extraction and treatment of contaminated groundwater.

- Cost

Sediment Alternatives

The estimated present worth costs for the lagoon sediment alternatives are as follows: $112,600 for Alternative LS-1, $796,000 for LS-2, $1.29 million for LS-3, and $2.45 million for LS-4. In evaluating cost effectiveness, Alternative LS-3 satisfies the Remedial Action Objectives to the greatest extent at the least cost.

Groundwater Alternatives

The estimated present worth costs for the groundwater alternatives include $112,600 for Alternative GW-1, $499,000 for GW-2, and $8.41 million for Alternative GW-3. Of the alternatives that accomplish the Remedial Action Objectives for the groundwater and provide for the protection of human health, Alternative GW-2 is the most cost effective.

! State Acceptance

The State of New Jersey concurs with the selected remedy presented in this Record of Decision.

! Community Acceptance

In general, both officials and community residents expressed support for the preferred remedy. A more detailed discussion of community concerns is presented in the Responsiveness Summary.

SELECTED REMEDY

Based upon consideration of the requirements of CERCLA, the detailed analysis of the various alternatives, and public comments, both EPA and. NJDEP have determined that Alternative LS-3 and Alternative GW-2 comprise the most appropriate remedy for the K&M Site.

The major components of the Selected Remedy are:

! Excavation, and off-site treatment as necessary, and off-site disposal, of approximately 1000 cubic yards of lagoon sediments; and

! Long-term monitoring of the contaminated shallow ground-water underlying the Site. It is anticipated that the groundwater monitoring will be conducted annually for at least five years. The frequency and need to continue monitoring will be reevaluated after this five year period.

! Institutional controls to limit groundwater use in the Navesink Formation. (NJDEP will.establish a Classification Exception Area which will restrict the use of the Navesink groundwater in the vicinity of the Site.)

The selection of this remedy is based upon the comparative analysis of the alternatives discussed above and provides the best balance of tradeoffs with respect to the nine evaluation criteria.

STATUTORY DETERMINATIONS

Under its legal authorities, EPA's primary responsibility at Superfund Sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences. These specify that when complete, the selected remedial action for the Kauffman & Minteer Site must comply with applicable, or relevant and appropriate environmental standards established under federal and state environmental laws unless a statutory waiver is justified. The selected remedy also must be cost effective and utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. Finally, the statute includes a preference for remedies that employ treatment that permanently and significantly reduce the volume, toxicity, or mobility of hazardous wastes. The following sections discuss how the selected remedy meets these statutory requirements.

Protection of Human Health and the Environment

The selected alternative addresses the human health-based remedial action objectives associated with contaminated lagoon sediments and is, therefore, considered to be effective in achieving protection of human health in both the short and long term. Threats to human health and the environment would be eliminated as there would be no possibility of direct ingestion of lagoon sediments or inhalation of organic compounds which volatilize from the lagoon sediment. In addition, the contaminated sediments will no longer be a source of groundwater contamination.

For groundwater, the remedy does not entail removal or, natural attenuation and treatment of the contaminated shallow groundwater, but relies on monitoring to be protective. Although there is no current exposure to contaminated groundwater, future exposure is possible. In order to protect against the potential future exposure, the remedy will include institutional controls, which will consist of NJDEP establishing a Classification Exception Area (CEA) to restrict use of the contaminated portion of the Navesink groundwater. The CEA will include the development of a well restriction area in the vicinity of the Site. These restrictions will ensure that any pumping well installed in the vicinity (e.g. within 500 feet of the Site) does not exert any significant hydraulic influence on the area of contaminated groundwater. The monitoring program will assist in ensuring that contaminated groundwater does not migrate to areas not protected by the well restrictions. The remedy will include the installation of an additional monitoring well, and periodic sampling and analysis. it is anticipated that the groundwater monitoring will be conducted annually for at least five years. The frequency and need to continue monitoring will be reevaluated after this five year period. Implementation of the remedy will effectively prevent current and future exposure to contaminated groundwater, and therefore provide adequate overall protection of human health and the environment.

Compliance with Applicable or Relevant and Appropriate Requirements

The remedy will comply with all ARARs. Contaminated sediments exceeding remediation goals will be removed and disposed of in accordance with applicable law. Table 30 provides for a listing of associated ARARs. Action-specific ARARs will be achieved by conducting all sediment removal activities in accordance with OSHA, RCRA, and New Jersey hazardous waste regulations. Excavated material will be appropriately packed and shipped off-site to a permitted RCRA Subtitle C disposal facility if hazardous, or a permitted RCRA Subtitle D landfill if non-hazardous. Location specific ARARs include Executive Order 11990 for restoration of the soils adjacent to the lagoon.

Currently, no exposure to contaminated groundwater is occurring. Therefore, contaminant-specific ARARs (MCLs) are not applicable, but will be considered in evaluating the results of the long-term monitoring. If future exposure to contaminated groundwater occurs, Federal and State MCLs would be applicable contaminant-specific ARARs.

Cost-Effectiveness

The cost effectiveness of a remedy is determined by weighing the cost against the alternative's ability to achieve ARARs and remedial action objectives. The selected remedy is cost effective as it has been determined to provide the greatest overall long-term and short-term effectiveness in proportion to its present worth cost, $1,800,000. Although Alternatives LS-1 is less costly, it does not provide for protection of human health and the environment. Similarly, Alternative LS-2, while less costly than the selected remedy, is not effective over the long term, and does not completely eliminate the potential for exposure to contaminated sediments. The ground water monitoring program will be effective in achieiving the remedial action objectives at significantly less cost than active remediation of the shallow aquifer.

Utilization of Permanent Solutions and Alternative Treatment Technologies to the Maximum Extent Practicable

The selected remedy represents the maximum extent to which permanent solutions and treatment technologies can be utilized in a cost-effective manner at the Site. It further provides the best balance of trade-offs with respect to the nine evaluation criteria. Of the three action alternatives for sediment, the selected remedy is the most cost effective permanent remedy; the contaminated sediments will be removed and disposed of off site. The complete removal of the contaminated sediments will provide a greater degree of flexibility for future development of the Site. In addition, the selected remedy, unlike Alternative LS-2, does not rely upon long-term maintenance to be protective of human health and the environment.

Preference for Treatment as a Principal Element

Although the remedy may include some off-site treatment of those contaminated sediments found to be RCRA-hazardous, the selected remedy does not rely on the use of treatment technologies as a principal component. Therefore, the statutory preference for remedies that employ treatment as a principal element is not satisfied.

DOCUMENTATION OF SIGNIFICANT CHANGES

There are no significant changes from the preferred alternative presented in the Proposed Plan.

APPENDIX I

<IMG SRC 0296278B>
<IMG SRC 0296278C
<IMG SRC 0296278D>
<IMG SRC 0296278E>
<IMG SRC 0296278F>

APPENDIX II

Table 1

KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
LAGOON SOILS AND SEDIMENT SAMPLE DATA SUMMARY

SOIL SAMPLES	SURFACE SEDIMENT/SOILS SAMPLES							SUBSURFACE	
SAMPLE ID	SD14	SDI5	SD16	SD17	SD18	SS12	SS13	SB02	SB02A
DATE SAMPLED	03/12/92	03/12/92	03A 2/92	03/13/92	03/13/92	10/18/91	10/18/91	11/06/91	11/06/91
SAMPLE TYPE	Lagoon Sed	Lagoon Sed	Lagoon Sod	Lagoon Sod	Lagoon Sod	Berm Soil	Berm Soil	24FT	10-12FT
Volatile Organics (ug/kg)									
CARBON DISULFIDE	1,700 UJ	230,000 UJ	1,800 UJ	2,500 J	1,700 UJ	12 U	12 UJ	62 U	12U
Chlorinated Aliphatics									
1,1-DICHLOROETHANE	1.700 U	27,000 J	1,800 U	3,600 UJ	1.700 UJ	12 U	12 UJ	62 U	2 J
1,2- DICHLOROETHENE (TOTAL)	1,700 U	1,100,000	1,800 U	3,600 UJ	1,700 UJ	12 U	12 UJ	62 U	7 J
METHYLENE CHLORIDE	1,700 U	230,000 UJ	1,800 UJ	3,600 UJ	1,700 UJ	32 U	62 UJ	9 J	10 J
TETRACHLOROETHENE	1,700 U	230.000	1,800 U	3,600 UJ	1,700 UJ	12 U	3 J	62 U	12 U
1,1,1 TRICHLOROETHANE	1,700 U	1,600000	3,600 UJ	1,700 UJ	12 U	12 UJ	12 U	62 U	12 U
TRICHLOROETHENE	170 U	3,100,000	1,800 U	3 600 UJ	1,700 UJ	12 U	12 UJ	62 U	1 J
Ketones									
ACETONE	1,700 UJ	230,000 UJ	1,800 UJ	1,200 J	1,700 UJ	29 UJ	63 UJ	260 UJ	140 U
2- BUTANONE	1,700 U	230,000 U	1,800 U	960 J	1,300 J	12 UJ	12 UJ	130	31
2- HEXANONE	1,700 UJ	230.000 UJ	1,800 UJ	2,200 J	1, 700 UJ	12 UJ	12 UJ	62 U	4 J
4- METHYL-2-PENTANONE	1,700 UJ	230,000 UJ	1,800 UJ	3,600 UJ	1, 700 UJ	12 UJ	12 UJ	62 U	4 J
BTEX Compounds									
TOLUENE	580 J	2,200,000	810 J	1,700 J	770 J	12 U	2 J	160	16
ETHYLBENZENE	880 J	1,300,000	1,800 J	3,800 J	1,700 J	12 U	5 J	360	18
XYLENE S (TOTAL)	3.200 J	3,700,000	6,500	24,000 J	5,900 J	12 U	37 J	1,400	84
TOTAL NUMBER OF TICS	2	2	2	9	5	0	5	10	9
TOTAL TIC CONCENTRATION	1,580	290,000	2,100	43,500	9,690	0	101	3,520	197
Semivolatile Organics (ug/kg)									
PHENOL	14,000 UJ	110,000 J	13,000 U	290,000 UJ	14000 U	7,800 UJ	7,400 UJ	680 J	310 J
2-METHYLPHENOL	14,000 UJ	74,000 UJ	13,000 U	290,000 UJ	14,000 UJ	7,800 UJ	7,400 UJ	21,000 J	100 J
1,2 DICHLOROBENZENE	14000 UJ	15,000 J	13000 U	13000 UJ	14000 U	7800 UJ	7,400 UJ	2,100 U	390 U
ISOPHORONE	14000 UJ	74000 UJ	13000 U	290,00 UJ	14000 U	7800 UJ	7,400 UJ	2,100 U	41 J
Polynuclear Aromatic Hydrocarbons									
NAPHTHALENE	14000 UJ	41,000 J	13000 U	290,000 UJ	14000 U	7800 UJ	7,400 UJ	2,100 U	390 U
2-METHYL NAPHTHALENE	1,400 J	66,000 J	13000 U	290,000 UJ	3,100 J	7800 UJ	7,400 UJ	240 J	390 U
ANTHRACENE	14000 UJ	13,000 J	13000 U	290,000 UJ	14000 U	7800 UJ	7,400 UJ	2,100 U	390 U
TOTAL PAHS	1,400 J	120,000 J	0	0	3,100 J	0	0	240 J	0

Phthalates									
DI-N-BUTYLPHTHALATE	1,900	120,000 J	1,800 J	290,00 UJ	14000 U	4,600 J	7,400 UJ	210 J	150 J
BUTYLBENZYLPHTHALATE	540,000 J	31,000,000 J	500,000 B	690,000 J	250,000 B	270,000 J	9,300 UJ	12,000	1,500
BIS(2-ETHYLHEXYL)PHTHALATE	14000 UJ	74000 UJ	13000 U	290,000 UJ	14000 U	58,000 J	7,000 J	2,100 U	390 U
DI-N-OCTYLPHTHALATE	82,000 J	4,400,000 J	85,000	120,000 J	35,000	500,000 J	67,000 J	5,300	250 J
TOTAL NUMBER OF TICS	17	20	20	5	19	20	20	19	15
TOTAL TIC CONCENTRATION	690,000	13,170,000	616,000	13,170,000	365,900	3,361,000	888,000	80,600	5,268
PETROLEUM HYDROCARBONS (mg/kg)	1,215	249,000	5,270	5,630 J	5,200	42,600	2.880 J	272	48
TOTAL ORGANIC CARBON (mg/kg)	24,500 J	103,000 J	15,900 J	32,300 J	3,080 J	36,124 J	23,676 J	3,320	831
TOT. ORGANIC CARBON (MG/KG)	24,500 J	103,000 J	15,900 J	32,300 J	3,080 J	41,300 J	29,300 J	3,320	831
TOT ORGANICS (VOC+SVOC+TPHC)mg/kg	2,537	311,482	6,484	19,960	5,872	46,794	3,842	377	56

Notes:

U = Not detected. J = Estimated Value. B = compound also detected in associated method blank

TCL and TAL analytes not listed were not detected

Shading indicates exceedance of applicable criterion.

Table 1

KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION

LAGOON SOILS AND SEDIMENT SAMPLE DATA SUMMARY

	SURFACE SEDIMENT/SOIL SAMPLES							SUBSURFACE SOIL SAMPLES		
SAMPLE ID	SD14	SD15	SD16	SD17	SD18	SS12	SS13	SB02	SB02A	BACKGROUND
DATE SAMPLED	03/12/92	03/12/92	03/12/92	01/13/12	03/13/92	10/10/91	10/18/91	11/06/91	11/06/91	
SAMPLE TYPE	Lagoon Sed	Lagoon Sed	Lagoon Sed	Lagoon Sed	Lagoon Sed	Berm Soil	Berm Soil	2-4 FT	10-12 FT	SOIL CRITERIA(3)
Inorganics (mg/kg)										
ANTIMONY	2.1 UJ	2.4 UJ	2.2 UJ	2.3 UJ	2.2 UJ	8.2 UJ	0.99 UJ	3.3 J	31 UJ	0.04
ARSENIC	57 J	4.8 J	3.6 J	4.1 J	3.9 J	0.9 UJ	1.0 UJ	7.1	2.1	34
BARIUM	32.1	168.0 J	24.5	27.7	18.0	12.3	8.5	16.4	15.8	1500(4)
BERYLLIUM	0.85	0.09	0.89	0.93	0.88	0.47 U	0.54	1.70	1.50	2.14
CADMIUM	0.26 U	3.10	0.27 U	0.28 U	0.27 U	0.93 U	0.99 U	0.49 U	0.52 U	0.26
CHROMIUM	28.3	39.3	35.6	56.6	50.9	26.4 J	44.1 J	101.0 J	69.4	41.1
COBALT	1.5	4.6	1.2	1.6	1.1	2.1 U	2.2 U	2.0	2.2	10.6(5)
COPPER	12.6	85.8	7.3	7.6 J	0.8 UJ	1.9 U	2.0 U	2.0	2.0	11.1
LEAD	10.4	217.0	16.7	26.1	8.5	9.9 J	3.7 J	3.5	3.3	400(6)
MANGANESE	62.4	136.0	23.7	13.8	11.0	19.9	4.1	12.0	13.4	208.0
MERCURY	0.13 U	0.13	0.13 U	0.14 U	0.14 U	0.12 U	0.12 U	0.09 U	0.12 U	0.34
NICKEL	2.7	10.4	2.3	2.9	2.1	5.1 U	5.5 U	6.3	5.2	15.2
SELENIUM	R	R	R	R	R	0.93 UJ	0.99 UJ	0.25	0.26 U	0.22
VANADIUM	18.2	13.3	19.9	28.2	22.6	12.7	21.4	52.8	43.7	47.2
ZINC	21.9 J	345.0 J	27.2 J	42.3 J	20.7 J	14.1	27.8	R	R	70.2

Notes:

Shading indicates exceedance of applicable criterion.

(1) - Crustal abundant metal (Aluminum, Calcium. Iron, Magnesium, Potassium, and Sodium) not Listed.

(2) - TCL and TAL analytes not listed were not defected.

(3) - Inorganics soil background data from NJDEPE, 1993. Values are 2x local maximum.

(4) - Shacklette, H.T and Boerngen, J.G., 1984. Maximum background level in eastern U.S soils.

(5) - Tedrow, J.C.F , 1996, 2 x maximum background in New Jersey Sassafras Soils.

	TCLP REGULATORY LIMIT (40 CFR 261)	SURFACE SEDIMENT/SOIL SAMPLES				SUBSURFACE SOIL SAMPLES
SAMPLE ID		SD15	SW17	SD18	SS13	SB02S
DATE SAMPLED		03/12/92	03/13/92	03/13/92	10/18/92	3/12/91
SAMPLE TYPE		Lagoon Sed	Lagoon Sed	Lagoon Sed	Berm Soil	0-0.5 ft
TCLP Volatile Organics (ug/L)						
1,1- DICHLOROETHENE	700	188 J	5 UJ	5 U	5 U	5 U
1,2- DICHLOROETHANE	500	27 J	5 UJ	5 U	5 U	5 U
CARBON TETRACHLORIDE	500	5 UJ	5 U	5 U	1 J	5 U
TRICHLOROETHENE	500	4260 J	5 UJ	5 U	5 U	6
BENZENE	500	11 J	5 UJ	5 U	5 U	5 U
TETRACHLOETHENE	700	84 J	5 UJ	5 U	5 U	7
TCLP Semivolatile Organics (ug/L)						
1,4-DICHLOROBENZENE	7500	11 J	20 U	10 U	11 U	R
3,4 METHYLPHENOL (M&P-CRESOL)	200,000	93	20 U	8 J	2 J	25 J
TCLP Pesticides/Herbicides (ug/L)		No TCLP Pesticides or herbicides were detected				
TCLP Metals (ug/L)						
ARSENIC	5,000	4.4 J	4.6 J	3.6 U	3.6 U	6.1 J
BARIUM	100,000	768	187	263	180	219 U
CHROMIUM	5,000	5.5 U	5.5 U	5.5 U	6.3 J	9.4 J
LEAD	5,000	85.3 J	22.8 J	8.8 J	5.7 J	31.5 J
SILVER	5,000	5 UJ	5 UJ	5 UJ	5 UJ	6.7 J

Notes:
U = NOT DETECTED, J =- ESTIMATED VALUE, R = REJECTED VALUE
All data and regulatory limits in ug/1 in TCLP extract
Reported results are corrected for matrix spike recoveries as required by 40 CFR Part 268 Method 1311.
Shading indicates exceedance of applicable criterion.
TCLP analytes not listed were not detected in the TCLP extract of any sample.

Table 2
KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
MARSH AREA SOIL SAMPLE DATA SUMMARY

SAMPLE ID	SD07	SD08	SD09	SD10	SD11	SD12	SS14
SAMPLE LOCATION	MARSH	MARSH	MARSH	MARSH	MARSH	MARSH	MARSH
Volatile Organics (ug/kg)							
METHYLENE CHLORIDE	3 J	3 J	14 J	4 J	15 U	2 J	60 UJ
ACETONE	230 B	110 U	350 U	100 U	26 U	I 7 U	28 UJ
CARBON DISULFIDE	5 J	6 J	7 J	15 U	15 U	17 U	16 U
TOLUENE	360 D	4 J	940	15 U	15 U	17 U	16 U
XYLENES (TOTAL)	5 J	4 J	17 J	15 U	15 U	17 U	16 U
TOTAL NUMBER OF VOC TICS	1	3	4	3	0	1	0
TOTAL VOC TIC CONCENTRATION	11	84	372	472	0	29	0
Semivolatile Organics (ug/kg) (1)							
PHENOL	590 U	45000 U	720 J	1000 U	2000 U	560 U	520 U
Polynuclear Aromatic Hydrocarbons							
BENZO(B)FLUORANTHENE	590 U	45000 U	2300 U	1000 U	2000 U	560 U	520 U
BENZO(K)FLUORANTHENE	590 U	45000 U	2300 U	1000 U	2000 U	560 U	520 U
CHRYSENE	590 U	45000 U	2300 U	1000 U	2000 U	560 U	520 U
FLUORANTHENE	590 U	45000 U	2300 U	1000 U	2000 U	560 U	73 J
PYRENE	590 U	45000 U	2300 U	1000 U	2000 U	560 U	67 J
TOTAL PAHS	0	0	0	0	0	0	140 J
Phthalates							
BIS(2-ETHYLHEXYL)PHTHALATE	590 U	45000 U	3800 U	1000 U	8600	560 U	1600
BUTYLBENZYLPHTHALATE	2100	430,000	160,000 D	280 J	840 J	560 U	600 U
DIETHYLPHTHALATE	590 U	45000 U	2300 U	1000 U	2000 U	58 J	520 U
DI-N-BUTYLPHTHALATE	590 U	45000 U	3200	1000 U	2000 U	130 J	520 U
DI-N-OCTYLPHTHALATE	46,000 D	480,000 D	160,000 D	22,000 D	12,000	170 J	2200
TOTAL NUMBER OF SV TICS	19	20	20	20	20	19	20
TOTAL SV TIC CONCENTRATION	70,670	4,898,000	1,164,000	197,500	162,700	29,520	64,610
TOT. PET. HYDROCARBON (TPHC I (mg/kg)	465 J	4610 JQ	2480 JQ	2610 JQ	213 J	193 J	220 J
TOT. ORGANIC (VOC+SV+TPHC)(mg/kg)	584	10,418	3967	2833	389	223	288
Inorganics (mg/kg)							
ARSENIC	5.7	4.6	2.9	4.6	4.7	5.3	R
BARIUM	79.8	42.0	30.2	40.5	37.5	59.7	35.4
BERYLLIUM	2.3	1.2	0.9	1.3	1.0	1.5	0.7
CADMIUM	0.7 U	0.5 U	0.6	0.6	0.7	0.7 U	1.3 U

CHROMIUM	131.0	68.5	52.1	70.6	47.5	73.1	37.3 J
COBALT	2.4	1.8	1.3	2.6	1.9	1.8	2.8 U
COPPER	16.4	7.4	4.7	8.1	7.3	11.3	5.1
LEAD	28.7	61.4	20.6	91.9	42.0	68.6	R
MANGANESE	21.6	23.4	24. 1	22.6	25.4	21.3	20.5
NICKEL	9.1	5.8	3.4	5.3	5.8	6.5	7.0 U
SELENIUM	1.4	0.5	0.6	0.7	0.9	1.3	1.3 UJ
VANADIUM	63.9	35.1	27.1	38.2	28.8	39.4	16.3
ZINC	44.2 J	79.6 J	41.8 J	51.4 J	70.1 J	34.8 J	35.8
CYANIDE	2.4 J	1.5 U	1.8 U	2.0 U	1.7 U	1.8 U	0.79 U
Total Organic Carbon (mg/kg)	112000	64800	104000	74000	68300	126000	42800 J

Notes:

U = NOT DETECTED. J = ESTIMATED VALUE. R = REJECTED BY VALIDATION. D =VALUE FROM SECONDARY DILUTION. X = ISOMERS NOT DIFFERENTIATED.
Q = QUANTITATION SUSPECT (concentration in diluted analysis was below reliable quantitation limit).

Shading indicates exceedance of applicable criterion.

(1) -Contaminants listed are those detected in soil samples

SAMPLE ID	SS15	SS16	SS17	SS18	SS19	SB16
SAMPLE LOCATION	MARSH	MARSH	MARSH	MARSH	MARSH	MW104S
Volatile Organics (ug/kg)(1)						
METHYLENE CHLORIDE	36 UJ	130 UJ	150 UJ	160 UJ	270 UJ	13 U
ACETONE	23 UJ	19 J	16 U	14 UJ	16 U	13 U
CARBON DISULFIDE	14 UJ	19 U	16 U	14 UJ	16 U	13 U
TOLUENE	14 UJ	19 U	16 UJ	14 UJ	16 UJ	13 U
XYLENES (TOTAL)	14 UJ	19 U	16 UJ	14 UJ	16 UJ	13 U
TOTAL NUMBER OF VOC TICS	0	2	1	3	1	0
TOTAL VOC TIC CONCENTRATION	0	121	20	75	30	0
Semivolatile Organics (ug/kg)(1)						
PHENOL	480 U	1100 U	990 U	900 U	920 U	430 U
Polynuclear Aromatic Hydrocarbons						
BENZO(B)FLUORANTHENE	100 JX	1100 U	990 UJ	900 UJ	920 U	430 U
BENZO(K)FLUORANTHENE	100 JX	1100 U	990 UJ	900 UJ	920 U	430 U
CHRYSENE	56 J	1100 U	990 UJ	900 U	920 UJ	430 U
FLUORANTHENE	69 J	1100 U	990 U	900 U	920 U	430 U
PYRENE	88 J	1100 U	990 UJ	900 U	920 UJ	430 U
TOTAL PAHS	413 J	0	0	0	0	0
Phthalates						
BIS(2- ETHYLHEXYL)PHTHALATE	480 U	1100 U	990 UJ	900 U	920 UJ	430 U
BUTYLBENZYLPHTHALATE	480 U	1100 U	990 UJ	900 U	920 UJ	430 U
DIETHYLPHTHALATE	480 U	1100 U	990 U	900 U	920 U	44 J
DI-N-BUTYLPHTHALATE	480 U	3000 U	5100 U	1100 U	13000 U	310 J
DI-N-OCTYLPHTHLATE	470 J	110 U	990 UJ	900 UJ	920 U	430 U
TOTAL NUMBER OF SV TICS	18	8	7	8	8	9
TOTAL SV TIC CONCENTRATION	26,170	33,600	74,100	27,900	42,400	2390
TOT. PET. HYDRODCARBON (TPHC) (mg/kg)	85 J	218 J	168 J	217 J	93 J	60 J
TOT. ORGANIC (VOC +SV+TPHC)(mg/kg)	112	252	242	245	135	63
Inorganics (mg/kg)(1)						
ARSENIC	R	3.9 J	5.5	4.4	5.1	5.3
BARIUM	45.4	38.5 J	81.4	63.4	81.6	45.4
BERYLLIUM	0.8	0.6 J	1.1	1.1	1.6	1.7

CADMIUM	1.2 U	2.0 UJ	1.6 U	1.5 U	1.7 U	0.5 U
CHROMIUM	42.0 J	28.2 J	53.1	49.8	64.3	99.2
COBALT	2.6 U	2.0 UJ	1.6 U	1.5 U	1.7 U	1.9
COPPER	10.2	7.3 J	31.5	12.6	21.6	8.6
LEAD	59.6 J	R	211.0 .J	R	R	22.6
MANGANESE	20.9	16.9 J	61.2	41.1	26.7	16.0
NICKEL	6.4 U	3.3 UJ	6.7	3.1	6.3	5.2
SELENIUM	1.2 UJ	1.2 UJ	1.0 U	0.9 UJ	1.0 U	1.0
VANADIUM	18.7	16.5 J	23.6	19.4	30.7	54.7
ZINC	37.5	47.0	119.0 J	66.2 J	81.0 J	R
CYANIDE	0.72 U	1.1 J	1.2	1.3	2.2	1.7 U
Total Organic Carbon (mg/kg)	72500 J	67400 J	61500 J	57000 J	85000 J	R

Notes:

U= NOT DETECTED. J = ESTIMATED VALUE. T = REJECTED BY VALIDATION. D = VALUE FROM SECONDARY DILUTION. X = ISOMERS NOT DIFFERENTIATED
Q = QUANTITATION SUSPECT (concentration in diluted analysis was below reliable quantitation limit).
Shading indicates exceedance of applicable criterion.
(1) Contaminants listed are those detected in soil samples

KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
GROUNDWATER SAMPLE DATA SUMMARY

	SHALLOW GROUNDWATER WELLS									DEEP GROUNDWATER WELLS			GROUNDWATER CRITERION		
LOCATION	MW- 1	MW-2	MW-3	MW101S	MW102S	MW103S	MW104S	MWI05S	MW106S	MW101D	MW102D	MW1030			
SAMPLE ID	GW09	GW08	GW07	GW05	GW01	GW12	GWI0	GW03	GW11	GW06	GW02	GW13			
DATE SAMPLED	12/9/92	12/18/91	12/18/91	12/18/91	12/17/91	12/19/92	12/19/91	12/17/91	12/18/91	12/19/91	12/17/91	12/17/92	NJ GWQC(1)	NJ MCLs(2)	US(3) MCLs)
VOLATILE ORGANICS (ug/l)(4)															
Chlorinated VOCs															
VINYL CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	17	10 U	10 U	100 U	10 U	5	2	2
METHYLENE CHLORIDE	20 U	16 U	10 U	11 U	25 U	23 U	18 U	79 B	10 UJ	10 U	1,000 B	12 U	2	2	5
1,1-DICHLOROETHENE	10 U	10 U	10 U	10 U	2 J	10 U	10 U	10 U	10 U	10 U	100 U	10 U	2	2	7
1,1-DICHLOROETHANE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	4 J	10 U	10 U	100 U	10 U	70	--	--
1,2-DICHLOROETHENE (TOTAL	10 U	10 U	10 U	10 U	10 U	10 U	10 U	94	10 U	10 U	100 U	10 U	10(5)	10	10(5)
1,1,1-TRICHLOROETHANE	10 U	10 U	10 U	10 U	15 U	10 U	10 U	10 U	10 U	10 U	100 U	10 U	30	26	200
TRICHLOROETHENE	10 U	10 U	10 U	10 U	10 U	10 U	16	10 U	10 U	10 U	100 U	10 U	1	1	5
TETRACHLOROETHENE	10 U	10 U	10 U	10 U	4 J	10 U	10 U	10 U	10 U	10 U	100 U	10 U	1	1	5
BTEX Compounds															
BENZENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1 U	10 U	10 U	100 U	10 U	1	1	5
XYLENES (TOTAL)	10 U	10 U	10 U	10 U	10 U	10 U	10 U	8 J	10 U	10 U	100 U	10 U	40	44	10,000
TOTAL NUMBER OF TICS	0	0	0	0	0	0	0	0	0	0	0	0	--	--	
TOTAL TIC CONCENTRATION	0	0	0	0	0	0	0	0	0	0	0	0	--	--	--
SEMIVOLATILE ORGANICS (ug/L)(4)															
ISOPHORONE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	570	10 U	10 U	10 UJ	10 UJ	100	--	--
NAPHTHALENE	10 U	10 U	10 U	10 U	10 U	10 U	10 U	1 J	10 U	10 U	10 UJ	10 UJ	--	--	--
BUTYLBENZYLPHTHALATE	10 U	10 UJ	10 UJ	10 UJ	10 U	10 UJ	10 UJ	10 U	1 J	10 UJ	10 UJ	10 UJ	100	--	--
BIS(2-ETHYLHEXYL)PHTHALATE	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 UJ	1 J	10 UJ	2 J	10 UJ	10 UJ	10 UJ	30	--	--
DI-N-OCTYLPHTHALATE	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	1 J	10 UJ	10 UJ	10 UJ	100	--	--
TOTAL NUMBER OF TICS	3	2	1	0	2	2	6	19	9	0	8	4	--	--	
TOTAL TIC CONCENTRATION	35	17	3	0	29	18	34	374	71	0	43	35	--	--	--
WET CHEMISTRY ANALYTES (mg/l)															
Total Suspended Solids	106.6	30.3	71.2	440.2	85.8	78.1	260	202.7	384.5	50.7	39.1	23.9	--	--	--
Total Dissolved Solids	230 J	270	310	220	40	360 J	470 J	180 J	210	660 J	40	100 J	500,000	--	500,000
Chloride	17.4	5.1 U	14.0	112.5	10.85	7.0 U	13.5	73.0	12	94.0	8.7	10.8	250,000	--	500
MBAS (Surfactants)	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	0.25 U	4.2	0.25 U	0.25 U	0.25 U	0.25 U	500(7)	--	10
Nitrate (NO3 as N)	0.10 U	0.19	2.3	0.95	0.10 U	2.1	14.0	8.9	0.42	0.1 U	1.5	0.10 U	10,000	--	--
Chemical Oxygen Demand	4.44	26.0	47.4	41.2	24.2	10.1 U	33.6 U	51.0 J	25.0	13 U	20.6	8.6 U			

													--	--	--
Biochemical Oxygen Demand	2.8 U	0.6 U	0.3 U	0.9 U	4.3	1.0 U	4.4 U	3.9 J	0.2 U	5.9 U	1.2 U	3.3 U	--	--	--
Total Petroleum Hydrocarbons	0.3 U	0.6 U	0.3 U	0.3 U	0.7 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	(8)	--	--

Notes:

U = NOT DETECTED, J = ESTIMATED VALUE, R = REJECTED (UNUSABLE) DATUM, B = DETECTED IN METHOD BLANK, NC = NO CRITERION.
Shading indicates exceedance of applicable criterion.
(1) - NJGWQ criteria based on values in NJAC 7-9-6 for class ll-A waters.
(2) - NJ primary drinking water MCLs (NJAC 7:10-16.7(a)).
(3) - Federal MCLS (40CFR 141.61).
(4) - Contaminants listed are those detected in groundwater samples.
(5) - Value shown is cis 1.2-dichloroethene; standard for trans isomer is 100 ug/l).
(6) - Exceedance presumed based on literature data indicating total 1,2- DCE comprised of 60% cis isomer, probable cis isomer concentration of 56 ug/l exceeds the 10 ug/I criterion
(7) - Foaming Agents (ABS/LAS)
(8) - None noticeable (O&G+TPHC)

SHALLOW GROUNDWATER WELLS

LOCATION	MW-1	MW-1	MW-2	MW-2	MW-3	MW-3	MW101S	MW101S	MW102S	MW-102S	MW103S	MW103S	MW104S	MW104S
SAMPLE 10	GWO9	GW09A	GW08A	GWO8	GW07A	GW07	GW05A	GWO5	GWO1	GWO1A	GW12	GW12A	GW10	GW10A
DATE SAMPLED	12/19/91	12/19/91	12/18/91	12/18/91	12/18/91	12/18/91	12/18/91	12/18/91	12/18/91	12/19/91	12/19/91	12/19/91	12/19/9i	12/19/91
SAMPLE TYPE	TOTAL	FILTERED	TOTAL	FILTERED	TOTAL	FILTERED	TOTAL	FILTERED	TOTAL	FILTERED	TOTAL	FILTERED	TOTAL	FILTERED
INORGANICS (mg/L)(1,2)														
ARSENIC	7.6	2.0 U	3.0 J	2.0 U	9.1	2.0 U	19.4	2.0 U	2.0 UJ	2.0 UJ	7.1	2.0 U	2.3	2.0 U
BARIUM	26.5	7.5	17.0	12.8	23.9	3.0 U	61.7	39.2	53.4	35.9 J	54.9	9.8	50.5	39.5
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	2.2	1.0 U	3.0	1.2	1.0 U	1.0 UJ	2.0	1.0 U	1.0 U	1.0 U
CHROMIUM (total)	34.1 J	6.0 U	6.0 U	6.0 U	102.0	7. 1	151.0	6.0 U	6.0 U	6.0 UJ	80.4 J	6.0 U	24.9 J	6.0 U
COBALT	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	13.4	4.0 U	8. 1	4.0 UJ	4.0 U	4.0 U	4.0 U	4.0 U
COPPER	3.5	4.4	4.9	3.5	6.7	6.1	63.7	10.9	2.0 U	19.3 J	21.5	5.9	12.4	7.2
LEAD	6.0 J	1.0 UJ	1.4	1.0 UJ	4.4	1.0 UJ	24.5	2.9 J	4.2 J	1.0 UJ	16.0	1.0 UJ	6.2	1.0 UJ
MANGANESE	91.8	52.2	59.5 J	82.0 J	65.7	5.2	113.0	44.8	139.0	120.0 J	133.0	52.5	43.3	40.4
NICKEL	14.0	14.0 U	14.0 U	14.0 U	14.0 U	14.0 U	65.5	14.0 U	15.9	14.0 UJ	28.1	14.0 U	14.0 U	14.0 U
SELENIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.8	1.0 U	1.0	1.0 UJ	1.1 J	1.1	1.0 U	1.0 U
THALLIUM	1.0	1.5 J	1.0 U	1.0 U	1.0 U	1.1	1.0 U	1.1	1.6	1.0 UJ	1.0 U	1.6 J	1.6	1.4 J
VANADIUM	15.9	3.0 U	7.6	3.0 U	47.6	3.0 U	56.1	3.0 U	3.0 U	3.0 UJ	31.8	3.0 U	9.9	3.0 U
ZINC	19.5	4.6	9.1	6.2	38.4	4.5	92.6	29.8	R	R	41.3	6.8	55.5	48. 1
CYANIDE	3.0 U	NR	3.0 U	NR	3.0 U	NR	3.0 U	NR	3.0 UJ	NR	3.0 UJ	NR	6.9 J	NR

Notes:

U = NOT DETECTED. J = ESTIMATED VALUE. NR = ANALYSIS NOT REQUIRED
Shading indicates exceedance of applicable criterion.
(1) - Contaminants listed are those detected in groundwater samples.
(2) - TAL crustal abundant metals (aluminum, calcium, iron, magnesium, potassium, and sodium) not tabulated.

Table 3
KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
GROUNDWATER SAMPLE DATA SUMMARY

	SHALLOW GROUNDWATER WELLS				DEEP GROUNDWATER WELLS						GROUNDWATER QUALITY CRITERION		
LOCATION	MW105S	MW105S	MW106S	MW106S	MW101D	MW101D	MW102D	MW102D	MW103D	MW103D			
SAMPLE ID	GW03	GW03A	GW11	GW11A	GW06	GW06A	GW02	GW02A	GW13	GW13A			
DATE SAMPLED	12/17/91	12/17/91	12/18/91	12/18/91	12/19/91	12/19/91	12/17/91	12/17/91	12/19/91	12/19/91			
SAMPLE TYPE	TOTAL	FILTERED	TOTAL	FILTERED	TOTAL	FILTERED	TOTAL	FILTERED	TOTAL	FILTERED	NJGWQC(1)	NJ MCLs(2)	U.S. MCLs(3)
INORGANICS (mg/L)(4,5)													
ARSENIC	7.0 J	2.0 UJ	4.6	R	4.7	3.3	2.8 J	2.0 UJ	2.0 U	2.0 U	8	(6)	50(7)
BARIUM	131.0 J	30.4	131.0	64.8	88.8	85.7	42.8	41.0 J	30.3	27.4	2000	(6)	2000
BERYLLIUM	1.6 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	20	(6)	4
CHROMIUM (total)	57.8 J	6.0 U	62.3	6.0 U	136.0 J	6.0 U	6.0 U	6.0 U	6.0 UJ	6.0 U	100	(6)	100
COBALT	23.7 J	4.0 U	9.4	4.0 U	4.0 U	4.0 U	4.0 U	4.0 UJ	4.0 U	4.0 U	NC	(6)	NC
COPPER	8.2 J	4.3	23.0	5.4	5.8	2.0 U	2.0 U	2.8 U	11.9	2.0 U	1000	(6)	1300
LEAD	6.9 J	1.0 U	19.9	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 UJ	17.4	1.0 UJ	10	(6)	15
MANGANESE	231.0	90.8 J	172.0	157.0	155.0	128.0	132.0	135.0 J	80.2	77.4	50	(6)	--
NICKEL	95.9 J	14.0 UJ	139.0	142.0	71.5	14.0 U	18.3	20.1 J	14.0 U	14.0 U	100(6)	(6)	100
SELENIUM	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	50	(6)	50
THALLIUM	1.4 J	1.5	1.0 U	1.0 U	1.0 U	1.8 J	1.0 U	1.0 UJ	1.0 U	1.0 UJ	10	(6)	2
VANADIUM	19.4 J	3.0 U	18.3	3.0 U	3.0 U	3.0 U	3.0 U	3.0 UJ	3.0 U	3.0 U	NC	(6)	NC
ZINC	172.0 J	18.3 J	37.9	16.9	6.8	3.0 U	6.8	7.6 J	3.1	4.1	5000	(6)	--
CYANIDE	3.0 UJ	NR	3.0 U	NR	3.0 U	NR	5.0	NR	3.0 U	NR	200	(6)	200

Notes:

U = NOT DETECTED, J = ESTIMATED VALUE, NR = ANALYSIS NOT REQUIRED, NC = NO CRITERION.
Shading indicates exceedance of applicable criterion.
(1) - NJGWQ criteria based on values in NJAC 7:9.6 for class II-A waters.
(2) - NJ primary drinking water MCLs (NJAC 7:10-16.7(a)).
(3) - Federal MCLs (40 CFR 141.61).
(4) - Contaminants listed are those detected in groundwater samples
(5) - TAL crustal abundant metals (aluminum, calcium, iron, magnesium, potassium, and sodium) not tabulated.
(6) - NJ Adopts federal standards for inorganics (per NJAC 7:10 5.1)
(7) - Old MCL from 40 CFR 141.11.

Table 4
KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
UNDERGROUND STORAGE TANK AREAS SOIL SAMPLE DATA SUMMARY

SAMPLE ID	SB01	SB03	SB06	SB07	SB08	SB09	SOIL BACKGROUND CONCENTRATION(3)
SAMPLE LOCATION	UST 1-6	UST #7/8	UST #9	UST#9	UST1-6	UST #7/8	
DATE SAMPLED	10/21/91	10/16/91	10/18/91	10/18/91	10/18/91	10/16/91	
DEPTH (FT)	8 - 10	4 - 6	6 - 8	6 - 8	6 - 8	6 - 8	
VOLATILE ORGANICS (ug/kg)(1)	NO TARGET VOLATILE ORGANICS DETECTED IN ANY SAMPLE						--
TOTAL NUMBER OF TICS	1	0	0	0	0	0	
TOTAL TIC CONCENTRATION	11	0	0	0	0	0	
SEMIVOLATILE ORGANICS (ug/kg)	NO TARGET SEMIVOLATILE ORGANICS DETECTED IN ANY SAMPLE						
TOTAL NUMBER OF TICS	6	3	1	0	3	3	
TOTAL TIC CONCENTRATION	23.350	807	150	0	464	480	
Total Petroleum Hydrocarbons (mg/kg)	33.1 J	25 J	25 J	25 J	25 J	25 J	--
Total Organic Carbon (mg/kg)	639 J	903 J	777 J	608 J	816 J	663 J	--
METALS (mg/kg)(1,2)							
ARSENIC	22.6	9.4 J	16.4 J	10.5 J	6.7 J	4.6 J	34.2
BARIUM	12.4	11.5	7.5	10.2	19.1	10.5	1500(4)
BERYLLIUM	0.8	0.5 U	0.5 U	1.8	0.5 U	0.5 U	2.1
CHROMIUM	48.6	48.5 J	36.3 J	97.8 J	39.9 J	31.1 J	41.4
COBALT	1.7	2.2	2.2 U	5.1	2.1 U	2.2	10.6(5)
LEAD	3.4	2.3 J	3.7 J	2.1 J	3.2 J	2.4 J	400(6)
MANGANESE	29.2	10.3	5.3	3.9	3.1	21.0	208
NICKEL	2.1 U	5.1 U	5.5 U	5.4 U	5.1 U	5.3 U	15.2
VANADIUM	19.9	23.9	18.4	51.3	28.1	20.3	47.2
ZINC	24.4	18.0	16.9	38.1	21.2	27.1	70.2

Notes:
U = NOT DETECTED, J = ESTIMATED VALUE, R = REJECTED BY VALIDATION
Shading indicates exceedance of applicable criterion.
(1) - Contaminants listed are those defected in soil samples.
(2) - TAL crustal abundard metals (aluminum, calcium, iron, magnesium, potassium, and sodium) not tabulated.
(3) - Inorganics soil background data from NJDEPE, 1993 except where noted. Values are 2x local maximum.
(4) - Shacklette, H.T. and Boerngen. J.G. 1984. Maximum background level in eastern U.S. soils.
(5) - Tedrow. J.C.F.. 1986. Maximum background/2 x maximum background in New Jersey Sassafras Soils
(6) - EPA lead screening criterion (OSWER Directive 9355.4-12. 1994)

Table 5

KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
FORMER WASHWATER COLLECTION PIT SOIL SAMPLE DATA SUMMARY

	SURFACE SOIL SAMPLES				
SAMPLE ID	SS03	SS04	SS05	SB18	SOIL BACKGROUND
SAMPLE LOCATION	PIT	PIT	PIT	MW106S	CONCENTRATION
DATE SAMPLED	10/17/91	10/17/91	10/17/91	10/31/91	
VOLATILE ORGANICS (ug/kg)(1)					
METHYLENE CHLORIDE	30 UJ	31 UJ	28 UJ	6 J	--
ACETONE	33 UJ	29 UJ	25 UJ	170 J	--
2-BUTANONE	11 U	11 U	11 U	10 J	--
TOLUENE	11 U	11 U	11 U	3 J	--
XYLENES (TOTAL)	11 U	11 U	11 U	5 J	--
TOTAL NUMBER OF VOC TICS	0	0	0	0	
TOTAL VOC TIC CONCENTRATION	0	0	0	0	
SEMIVOLATILE ORGANICS (ug/kg)					
2-METHYLNAPHTHALENE	360 U	710 U	9,300 U	3,300 J	4,000-13,000(2,3)
BUTYLBENZYLPHTHALATE	360 UJ	200 J	9,300 U	38,000 J	--
BIS(2-ETHYLHEXYL)PHTHALATE	360 U	4,600 B	9,300 U	12,000 UJ	--
DI-N-OCTYLPHTHALATE	360 U	1,100	56,000	65,000 J	--
TOTAL NUMBER OF SV TICS	6	21	20	23	
TOTAL SV TIC CONCENTRATION	3,430	36,710	556,900	834,000	--
TOTAL PETROLEUM HYDROCARBONS (TPHC) mg/k	35 J	2,130 J	1,160	R	--
TOTAL ORGANICS (VOC + SVOC + TPHC) (mg/kg)	38	2,168	1,773	940	--
TOTAL ORGANIC CARBON (TOC) mg/kg	2,290 J	4,330 J	9,560 J	11,000 J	--
INORGANICS (mg/kg)(1,4,5)					
ARSENIC	0.9 UJ	3.8 J	3.4 J	4.6	34.2
BARIUM	12.3	22.8	57.3	25.9	1,500(6)
BERYLLIUM	0.4 U	0.5	0.9	0.9	2.14
CHROMIUM	12.8 J	40.1 J	21.3 J	85.5 J	41.4
COBALT	2.0 U	2.7	2.1 U	3.4	10.6(7)
COPPER	2.5	2.7	11.1	11.2	11.1
LEAD	3.8 J	30.3 J	61.3 J	34.9	400(8)
MANGANESE	22.0	34.6	146.0	21.2	208
NICKEL	4.9 U	4.8 U	5.0 U	6.8	15.2
VANADIUM	13.9	33.4	16.7	30.0	47.2
ZINC	10.1	36.5	61.2	49.0	70.2

TCL DATA		TCLP REGULATORY LIMIT(8)
TCLP VOLATILE ORGANICS	NO TCLP VOLATILES DETECTED	N/A
TCLP SEMIVOLATILE ORGANICS	NO TCL P SEMIVOLATILE S DETECTED	N/A
TCLP PESTICIDES/HERBICIDES	NO TCLP PESTICIDE S/HERBICIDES DETECTED	N/A

TCLP METALS (ug/l)					
BARIUM	100,000	209	436	388	N/A
CADMIUM	1,000	2.5 U	4.0 J	3.0 J	N/A
LEAD	5,000	2.1 UJ	12.7 J	22.3 J	N/A

Notes:

U = NOT DETECTED, J = ESTIMATED VALUE, NC = NO CRITERION, N/A = NOT ANALYZED, R = REJECTED BY VALIDATION.
Shading indicates exceedance of applicable criterion.
(1) = Contaminants listed are those detected in soil samples.
(2) = ATSDR. Toxicological Profile for Benzo(a)anthracene, 1990
(3) = Total Polynuclear Aromatics
(4) = TAL crustal abundant metals (aluminum, calcium, iron, magnesium, potassium, and sodium) not tabulated.
(5) = Inorganics soil background data from NJDEPE 1993 except where noted. Values are 2x local maximum.
(6) = Shacklette. H.T. and Boerngen, J.G., 1984 Maximum background level in eastern US soils.
(7) = Tedrow. J.C.F.,1986 Maximum background/2x maximum background in New Jersey Sassafras Soils
(8) = EPA lead screening criterion (OSWER Directive 9355.4-12. 1994)

Table 6
KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
UNPAVED OPERATIONS LOT SOIL SAMPLE DATA SUMMARY

	SURFACE SOIL				
SAMPLE ID		SS06	SS07	SS08	SS09
SAMPLE LOCATION	SS01	COMPOSITE	COMPOSITE	COMPOSITE	MW102S
DATE SAMPLED	10/17/91	10/22/91	10/22/91	10/22/91	10/16/91
VOLATILE ORGANICS (ug/kg)1					
METHYLENE CHLORIDE	28 UJ	67 UJ	110 UJ	140 UJ	55 UJ
1,2-DICHLOROETHENE (TOTAL)	13 U	11 UJ	11 U	3 J	11 U
2-BUTANONE	13 U	99 J	13 U	52 UJ	11 UJ
ACETONE	28 UJ	11 UJ	11 U	220 J	24 UJ
TOLUENE	13 U	65 J	11 U	12 UJ	11 U
XYLENES (TOTAL)	13 U	1600 D	11 U	11 UJ	11 U
VINYL CHLORIDE	13 UJ	11 UJ	11 U	11 U	11 U
TOTAL NUMBER OF VOC TICS	0	11	8	9	0
TOTAL VOC TIC CONCENTRATION	0	389	441	469	0
SEMIVOLATILE ORGANICS (ug/kg)					
CARBAZOLE	83 J	NR	NR	NR	370 U
Phthalates					
BIS(2-ETHYLHEXYL)PHTHALATE	430 U	690 U	37,000 J	9000	390 U
BUTYLBENZYLPHTHALATE	330 J	690 U	930	17,000 J	120 J
DI-N-BUTYLPHTHALATE	430 U	2100 U	3100 U	2700 U	370 U
DI-N-OCTYLPHTHALATE	220 J	690 U	690 U	720 U	190 J
TOTAL PHTHALATES	550	0	37,930	26,000	310
Polynuclear Aromatic Hydrocarbons (PAHs)					
2-METHYLNAPHTHALENE	87 J	690 U	690 U	720 U	180 J
ACENAPHTHAYLENE	64 J	690 U	690 U	720 U	370 U
ANTHRACENE	110 J	690 U	690 U	720 U	370 U
BENZO(A)ANTHRACENE	440	690 U	690 U	720 U	170 J
BENZO(A)PYRENE	370 J	690 U	690 U	720 U	160 J
BENZO(B)FLUORANTHENE	820 X	690 U	690 U	720 U	350 JX
BENZO(K)FLUORANTHENE	820 X	690 U	690 U	720 U	350 JX
BENZO(G,H,I)PERYLENE	350 J	690 U	690 U	720 U	180 J
CHRYSENE	420 J	690 U	690 U	720 U	390
DIBENZO(A)ANTHRACENE	140 J	690 U	690 U	720 U	370 U
FLUORANTHENE	670	690 U	450 J	720 U	310 J
INDENO(1,2,3-CD)PYRENE	280 J	690 U	690 U	720 U	110 J
NAPHTHALATE	68 J	690 U	690 U	720 U	130 J
PHENANTHRENE	300 J	690 U	720	720 U	260 J
PYRENE	530	690 U	500 J	720 U	240 J

TOTAL PAHs	4,649	0	1,220	0	2,480
TOTAL NUMBER OF SV TICS	19	5	10	9	20
TOTAL SV TIC CONCENTRATION	6,260	9,300	57,800	60,800	15,600
TOT.PET.HYDROCARBON(TPHC)(mg/kg)	1,510 J	11,600 J	56 J	21,000 J	1,100 J
TOT.ORGANICS(VOC+SVOC+TPHC)(mg/kg)	1,522	11,611	154	21,088	1,118
TOT ORGANIC CARBON (mg/kg)	251,000 J	90,505	8,980 J	93,705	63,500 J
METALS(mg/kg)					
Arsenic	7.6 J	5.2	4.2	5.6	5.7 J
Barium	93.4	32.0	27.4	35.0	59.2
Berllium	0.6	0.5	0.6	0.9	0.5
Cadmium	1.0 U	1.1 U	1.1 U	1.1 U	0.9
Chromium	24.5 J	18.2	23.1	35.8	25.0 J
Cobalt	10.3	1.7	1.7	1.2	3.4
Copper	116.0	8.3	13.1	5.7	26.2
Lead	340.0 J	35.4	41.7	32.6	R
Manganese	287.0	78.7	158.0	89.7	104.0
Nickel	12.9	2.3	3.5	3.3	4.8 U
Vanadium	40.2	12.0	19.8	21.5	21.5
Zinc	201.0	39.5 J	36.7 J	46.1 J	94.1
Cyanide	1.0	0.5 U	0.5 U	0.6 U	0.5 U
TCLP RESULTS(ug/L)					
TCLP VOLATILE ORGANICS					
TRICHLOROETHENE	5 UJ	N/A	5 UJ	N/A	26 J
TCLP SEMIVOLATILE ORGANICS	NONE DETECTED	N/A	NONE DETECTED	N/A	NONE DETECTED
TCLP PESTICIDES/HERBICIDES	NONE DETECTED	N/A	NONE DETECTED	N/A	NONE DETECTED
TCLP METALS					
Barium	558	N/A	332	N/A	336
Cadmium	4.0 J	N/A	3.0 J	N/A	6.0 J
Lead	30.0 J	N/A	5.9 J	N/A	29.2 J

Notes:
U = NOT DETECTED.
J = ESTIMATED VALUE.
R = REJECTED(UNUSABLE DATUM).
NR = NOT REPORTED.
NA = NOT ANALYZED.
X = ANALYTES COELUTE AS INDISTINGUISHABLE ISOMERS. VALUE REPRESENTS COMBINED CONCENTRATION.

Shading indicates exceedances of applicable criterion.

(1) = Contaminants listed are those detected in soil samples.

Table 6
KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
UNPAVED OPERATIONS LOT SOIL SAMPLE DATA SUMMARY

	SUBSURFACE SOIL	
SAMPLE ID	SB05	SB17
SAMPLE LOCATION	OPERATIONS LOT	MW105S
DATE SAMPLED	10/30/91	10/23/91
VOLATILE ORGANICS(ug/kg)		
METHYLENE CHLORIDE	7 J	95 UJ
1,2-DICHLOROETHENE	6 J	12 U
2-BUTANONE	12 U	37
ACETONE	89 J	13 U
TOLUENE	3 J	12 U
XYLENES (TOTAL)	12 U	12 U
VINYL CHLORIDE	11 J	12 U
TOTAL NUMBER OF VOC TICS	1	2
TOTAL VOC TIC CONCENTRATION	40	30
SEMIVOLATILE ORGANICS(ug/kg)		
CARBAZOLE	400 U	NR
Phthalates		
BIS(2-ETHYLHEXYL)PHTHALATE	400 U	740 U
BUTYLBENZLPHTHALATE	400 U	740 U
DI-N-BUTYLPHTHALATE	400 U	12,000 J
DI-N-OCTYLPHTHALATE	400 U	740 U
TOTAL PHTHALATES	0	12,000
Polynuclear Aromatic Hydrocarbons (PAHs)		
2-METHYLNAPHTHALATE	400 U	740 U
ACENAPHTHYLENE	400 U	740 U
ANTHRACENE	400 U	740 U
BENZO(A)ANTHRACENE	400 U	740 U
BENZO(A)PYRENE	400 U	740 U
BENZO(B)FLUORANTHENE	400 U	740 U
BENZO(K)FLUORANTHENE	400 U	740 U
BENZO(G,H,I)PERYLENE	400 U	740 U
CHRYSENE	400 U	740 U
DIBENZO(A,H)ANTHRACENE	400 U	740 U
FLUORANTHENE	400 U	740 U
INDENO(1,2,3-CD)PYRENE	400 U	740 U
NAPHTHALENE	400 U	740 U
PHENANTHRENE	400 U	740 U
PYRENE	400 U	740 U

TOTAL PAHs	0	0
TOTAL NUMBER OF SV TICS	6	6
TOTAL SV TIC CONCENTRATION	907	7810
TOT.PET.HYDRODCARBON(TPHC)(mg/kg)	357 J	47.1 J
TOT. ORGANICS(VOC+SVOC+TPHC)(mg/kg)	37	67
TOT.ORGANIC CARBON(mg/kg)	738	930 J
METALS(mg/kg)		
Arsenic	6.2	7.5
Barium	24.2	14.7
Beryllium	1.2	0.8
Cadmium	0.7 U	1.1 U
Chromium	101.0 J	57.5
Cobalt	2.0	1.6
Copper	9.0	1.3 U
Lead	5.5	2.6
Manganese	17.3	10.1
Nickel	5.1	2.5
Vanadium	32.5	24.5
Zinc	27.5	27.0 J
Cyanide	5.9 U	0.6 U
TCLP RESULTS (ug/L)		
TCLP VOLATILE ORGANICS	N/A	N/A
TRICHLOROETHENE	N/A	N/A
TCLP SEMIVOLATILE ORGANICS	N/A	N/A
TCLP PESTICIDES/HERBICIDES	N/A	N/A
TCLP METALS		
Barium	N/A	N/A
Cadmium	N/A	N/A
Lead	N/A	N/A

Notes

U = NOT DETECTED.
J = ESTIMATED VALUE.
R = REJECTED (UNSABLE DATUM).
NR = NOT REPORTED.
NA = NOT ANALYZED.
X = ANALYTES COELUTE AS INDISTINGUISHABLE ISOMERS. VALUE REPRESENTS COMBINED CONCENTRATION.

Shading indicates exceedances of applicable criterion.

(1) - Contaminants listed are those detected in soil samples.

Table 7
KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
VARIOUS FACILITY AREAS SOIL SAMPLE DATA SUMMARY

SURFACE SOIL SAMPLES				SUBSURFACE SOIL SAMPLES			
SAMPLE ID	SS02	SS10	SS11	SB04	SB10	SB12	SB15
SAMPLE LOCATION	SEPTIC	SPOILS	DRUMS	SEPTIC	MW101S	MW102S	MW103D
DATE SAMPLED	10/17/91	10/17/91	10/18/91	10/18/91	10/22/91	10/22/91	10/30/91
VOLATILE ORGANICS (ug/kg) (1)							
METHYLENE CHLORIDE	36 UJ	62 UJ	27 UJ	61 UJ	120 UJ	88 UJ	6 J
2-BUTANONE	11 U	13 U	13 U	12 UJ	13	12 U	12 U
TOTAL NUMBER OF VOC TICS	0	0	0	0	1	1	0
TOTAL VOC TIC CONCENTRATION	0	0	0	0	22	11	0
SEMIVOLATILE ORGANICS (ug/kg)(1)							
Polunuclear Aromatic Hydrocarbons							
NAPHTHALENE	50 J	430 U	420 U	390 U	720 U	740 U	380 U
PHENANTHRENE	63 J	430 U	420 U	390 U	720 U	740 U	380 U
FLUORANTHENE	60 J	430 U	420 U	390 U	720 U	740 U	380 U
PYRENE	64 J	430 U	420 U	390 U	720 U	740 U	380 U
TOTAL PAHS	237 J	0	0	0	0	0	0
Phthalates							
BUTYLBENZLPHTHALATE	60 J	430 U	110 J	390 U	720 U	740 U	380 U
DI-N-OCTYLPHTHALATE	320 J	66 J	820	390 U	720 U	740 U	380 U
TOTAL NUMBER OF SV TICS	20	7	20	1	4	3	2
TOTAL SV TIC CONCENTRATION	9280	1091	17700	400	4250	4900	217
TOT.PET.HYDRODCARBON(TPHC)(mg/kg)	191 JQ	320 JQ	72 J	200 J	47 J	34 J	25 UJ
TOT.ORGANICS(VOC+SVOC+TPHC)mg/kg	201	331	91	200	51	41	0.2
TOT.ORGANIC CARBON(mg/kg)	5,950 J	1,780 J	8,290 J	2,180 J	1,120 J	1,240 J	932 J
INORGANICS (mg/kg)							
ARSENIC	4.1 J	2.6 J	3.0 J	10.0 J	9.0	8.4	8.4
BARIUM	37.0	20.9	34.2	11.3	12.5	17.2	11.3
BERYLLIUM	0.6	0.5 U	0.6	0.5 U	0.6	0.4	0.4
CHROMIUM	24.6 J	11.9 J	28.1 J	41.6 J	44.4	34.0	50.6 J
COBALT	2.0 U	2.4	2.2 U	2.2 U	1.2 U	1.2 U	1.8 U
COPPER	5.4	14.6	1.9 U	1.9 U	1.4 U	1.7	15.3
LEAD	39.8 J	12.4 J	29.9 J	2.4 J	2.7	4.8 J	2.5
MANGANESE	122.0	92.1	112.0	8.8	20.1	51.4	9.8
NICKEL	4.9 U	5.8 U	5.3 U	5.3 U	2.8	2.6	2.1 U
VANADIUM	18.8	12.1	19.1	22.5	19.7	16.2	21.0
ZINC	40.8	24.6	42.6	17.1	15.8 J	13.2 J	10.9
CYANIDE	0.6 U	0.7	0.6 U	0.6 U	10	0.7	5.7 U

Notes:

U = NOT DETECTED.
J = ESTIMATED VALUE.
R = REJECTED BY VALIDATION.
NC = NO CRITERION.
Q = QUANTITATION SUSPECT(concentration in diluted analysis was below reliable quantitation limit).

Shading indicates exceedance of applicable criterion.

(1) - Contaminants listed are those detected in soil samples.

Table 8
KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
SURFACE WATER SAMPLE DATA SUMMARY

AQUATIC ENVIRONMENT LOCATIONS
SAMPLE LOCATION
SURFACE WATER
Intermittent
DISCHARGE LOCATIONS
Barker's Brook
Drainage
Downstream
Midstream
Upstream
FRESHWATER CHRONIC
Stream
Ditch
SAMPLE ID
SW01
SW02
SW03
AQUATIC CRITERION
SW04
SW05
SW06
DATE SAMPLED
12/17/91
12/17/91
12/17/91
GOLD BOOK
NJ SWQC
12/18/91
12/18/91
12/18/91

VOLATILE ORGANICS (ug/l)(3)								
METHYLENE CHLORIDE	39 BJ	16 UJ	10 UJ	47	2.49	10 UJ	10 UJ	10 UJ
TOTAL NUMBER OF TICS	0	0	0	-	-	0	0	0
TOTAL TIC CONCENTRATION	0	0	0	-	-	0	0	0
SEMIVOLATILE ORGANICS (ug/l)(3)								
PHENOL	10 U	10 U	10 U	2560	20,900	10 U	1 J	1 J
BUTYLBENZYLPHTHALATE	10 U	10 U	10 U	3	239	10 UJ	10 UJ	2 J
BIS(2-ETHYLHEXYL)PHTHALATE	10 UJ	10 U	10 UJ	4	1.76	3 J	10 UJ	10 UJ
DI-N-OCTYLPHTHALATE	10 UJ	10 UJ	10 UJ	360(2)	-	6 J	10 UJ	140 JD
TOTAL NUMBER OF TICS	0	0	0	-	-	14	2	20
TOTAL TIC CONCENTRATION	0	0	0	-	-	90	10	1565
WET CHEMISTRY ANALYTES(mg/l)								
Total Suspended Solids	5.6	68	12.6	(7)	25	33.1	55.2	1027.8 J
Total Dissolved Solids	100	10 U	30	(7)	500	450	230	710
Chloride	17.0	15.7	16.3	230	250	114	62.5	250.0
MBAS(Surfactants)	0.25 U	0.25 U	0.25 U	-	10,000	1.6	0.25 U	0.25 U
Nitrate(NO3 as N)	1.2	1.2	1.3	10	-	0.98	0.55	1.6
Chemical Oxygen Demand	5.8	5.8	5.8	-	-	262	57.2	328
Biochemical Oxygen Demand	1.2 U	1.7 U	1.9 U	-	-	48	1.4 U	7.1 J
Total Petroleum Hydrocarbons	0.3 U	0.3 U	0.3 U	-	(7)	0.3 U	0.3 U	0.9 U
FIELD MEASUREMENTS								
Temperature(C)	2.0	2.0	3.0	(7)	±1.7	30	4.0	35
Dissolved Oxygen (mg/l)	12.4	12.6	10.2	(7)	5.0	4.2	5.0	6.1
pH(Standard Units)	5.30	6.18	6.50	6.5-9.0	6.5-8.5	6.51	4.76	7.37
Eh(mv)	83.1	78.9	80.0	-	-	134.2	95.0	71.6
Conductivity(umho/cm)	100	90	90	-	-	160	345	900

Notes:
U=NOT DETECTED.
J=ESTIMATED VALUE.
R=REJECTED BY VALIDATION.
D=VALUE FROM SECONDARY DILUTION.

(1)-Gold Book values from Quality Criteria for water-1992, USEPA.

(2)-New Jersey FW-2 Surface Water Quality Criteria from NJAC 7:9B - 1.14

(3)-Contaminants listed are those detected in soil samples.

(4)-Insufficient data; value is lowest observed effect level (LOEL) for phthalate esters.

(5)-Proposed criterion.

(6)-No criterion for protection of aquatic life; value shown is for protection of human health by consumption of water.

(7)-No gerneral numerical criterion; narrative statement in document.

(8)-No published criterion; value shown is recalculated from IRIS, 9/90.

(9)-No change greater than 1.7"C (3"F).

(10)-24 hour average (minimum); 4.0 mg/l at any time. Criterion for non-trout waters.

Table 8
KAUFFMAN & MINTEER SITE REMEDIAL INVESTIGATION
SURFACE WATER SAMPLE DATA SUMMARY

AQUATIC ENVIRONMENT LOCATIONS DISCHARGE LOCATIONS

SAMPLE LOCATION BARKER'S BROOK

SURFACE WATER INTERMITTENT STREAM DITCH

SAMPLE ID SW01 SW01A SW02 SW02A SW03 SW03A

FRESH CHRONIC SW04 SW04A SW05 SW05A SW06 SW06A

DATE SAMPLED 12/17/91 12/17/91 12/17/91 12/17/91 12/17/91 12/17/91

AQUATIC CRITERIA 12/18/91 12/18/91 12/18/91 12/18/91 12/18/91 12/18/91

SAMPLE TYPE TOTAL FILTERED TOTAL FILTERED TOTAL FILTERED Gold Book NJ SWQC

TOTAL FILTERED TOTAL FILTERED TOTAL FILTERED

INORGANICS(mg/L)(3)

ARSENIC	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	190	0.017	3.5 J	2.0 J	2.0 J	2.3	8.1	2.8
BARIUM	31.7 J	30.1	31.9	30.2	32.2	92.5 J	1000(5)	2000(5)	7.3	30 U	22.8	10.3	380.0	27.6
BERYLLIUM	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	53(6)	-	1.0 U	1.0 U	1.0 U	1.0 U	4.3	1.0 U
CADMIUM	3.0 UJ	3.0 U	3.0 U	3.0 U	3.0 U	3.0 UJ	1.1	10(5)	3.0 U	3.0 U	3.0 U	3.0 U	10.2	3.0 U
CHROMIUM	6.0 UJ	6.0 U	6.0 U	6.0 U	6.0 U	6.0 UJ	210	160	12.3	6.0 U	6.0 U	6.0 U	130.0	6.0 U
COBALT	4.0 UJ	4.0 U	4.0 U	4.0 U	4.0 U	210 J	-	-	4.0 U	4.0 U	4.0 U	4.0 U	10.6	4.0 U
COPPER	2.0 UJ	7.7	2.0 U	9.1	2.0 U	50 J	12	-	13.6	6.1	12.2	5.2	148.0 J	6.9
LEAD	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	3.2	5(5)	10.9	3.5 J	17.7	5.6 J	430.0	6.4
MANGANESE	90.6 J	90.8	91.4	91.4	R	R	50	100	103.0	84.0	108.0	85.2	783.0	161.0
MERCURY	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.1 UJ	0.012	0.144	0.1	0.2	0.1 UJ	0.1 UJ	0.3 J	0.1 UJ
NICKEL	14.0 UJ	14.0 U	14.0 U	14.0 U	R	R	160	516	14.0 U	14.0 U	14.0 U	14.0 U	37.8	14.0 U
SELENIUM	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	50	10(5)	1.1	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U
THALLIUM	1.2 J	1.0 U	1.2	1.0 U	1.0 U	1.1 U	40	1.7	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ
VANADIUM	3.1 J	3.0 U	3.0 U	3.0 U	3.0 U	3.0 UJ	-	-	11.2	5.2	5.6	3.0 U	96.7	3.0 U
ZINC	17.5 J	21.0 J	18.7	19.1	R	R	110	-	94.2	26.0	61.3	41.6	852.0	51.3

Notes:
U = NOT DETECTED,
J = ESTIMATED VALUE,
R = REJECTED BY VALIDATION,
D = VALUE FROM SECONDARY DILUTION.

(1) - Gold Book values from Quality Criteria for water - 1992, USEPA.

(2) - New Jersey FW-2 Surface Water Qua;ity Criteria from NJAC 7:9B - 1.14.

(3) - Contaminants listed are those detected in soil samples.

(4) - TAL crustal abundant metals (aluminum, calcium, iron, magnesum, potassium, and sodium) not tabulated.

(5) Criterion based on protection of human health as drinking water source.

(6) Insufficient data; value is Lowest Observed Effect Level (LOEL).

(7) Value is for irrvalent chromium

Table 9
KAUFFMAN AND MINTEER SITE REMEDIAL INVESTIGATION
SURFACE WATER BODY SEDIMENT AND SOIL SAMPLE DATA SUMMARY

SAMPLE LOCATION	Barker's Brook Sediment			NOAA ER-L	NOAA ER-M	Intermittent Stream	Ditch Sediment	
SAMPLE ID	SD01	SD02	SD03	Guideline	Guideline	SD04	SD05	SD06
VOLATILE ORGANICS(ug/kg)								
CARBON DISULFIDE	3 J	15 U	15 U	NC	NC	2 J	15 UJ	8 J
Chiorinated Aliphatics								
VINYL CHLORIDE	17 U	15 U	15 U	NC	NC	14 UJ	15 UJ	830
METHYLENE CHLORIDE	17 U	2 J	9 J	NC	NC	19 J	15 UJ	14 J
1,1-DICHLOROETHENE	17 U	15 U	15 U	NC	NC	14 UJ	15 UJ	16 J
1,2-DICHLOROETHENE (TOTAL)	17 U	15 U	15 U	NC	NC	14 UJ	15 UJ	27,000
THRICHLOROETHENE	17 U	15 U	15 U	NC	NC	R	15 UJ	58 J
TETRACHLOROETHENE	17 U	15 U	15 U	NC	NC	14 UJ	R	19 J
BTEX Compounds								
BENZENE	17 U	15 U	15 U	NC	NC	R	15 UJ	18 J
TOLUENE	17 U	15 U	15 U	NC	NC	2 J	R	97,000
ETHYLBENZENE	17 U	15 U	15 U	NC	NC	14 UJ	R	35,000
XYLENES (TOTAL)	17 U	15 U	15 U	NC	NC	14 UJ	R	160,000
Ketones								
ACETONE	590 D	180 UJ	170 U	NC	NC	92 UJ	64 UJ	280 U
2-BUTANONE	220	47	34 U	NC	NC	17 UJ	15 UJ	120 U
TOTAL VOLATILE TICS	2	0	0	NC	NC	8	10	10
VOLATILE TIC CONCENTRATION	52	0	0	NC	NC	622	1201	5,920
SEMIVOLATILE ORGANICS (ug/kg)								
Polynuclear Aromatic Hydrocarbons (PAHs)								
ACENAPHTHENE	570 U	500 U	76 J	150	650	19,000 U	100,000 U	440,000 U
BENZO(A)ANTHRACENE	94 J	500 U	510 U	230	1,600	19,000 U	100,000 U	440,000 U
BENZO(A)PYRENE	72 J	500 U	510 U	400	2,500	19,000 U	100,000 U	440,000 U
BENZO(B)FLUORANTHENE	130 J	500 U	100 J	NC	NC	19,000 U	100,000 U	440,000 U
CHRYSENE	100 J	500 U	510 U	400	2,800	19,000 U	100,000 U	440,000 U
FLUORANTHENE	150 J	500 U	150 J	600	3,600	19,000 U	100,000 U	440,000 U
PHENANTHRENE	93 J	78 J	510 U	225	1,380	19,000 U	100,000 U	440,000 U
PYRENE	240 J	62 J	130 J	350	2,200	19,000 U	100,000 U	440,000 U
Total PAHs	879	140	456	4,000	35,000	0	0	0

Phthalates								
BUTYLBENZYLPHTHALATE	570 U	500 U	510 U	NC	NC	72,000	73,000 J	2,300,000
DIETHYLPHTHALATE	63 J	500 U	510 U	NC	NC	19,000 U	100,000 U	440,000 U
DI-N-BUTYLPHTHALATE	960	930	700	NC	NC	19,000 U	100,000 U	440,000 U
DI-N-OCTYLPHTHALATE	540 J	140 J	510 U	NC	NC	91,000	350,000	1,900,000
Total Phthalates	1,563	1,070	700	NC	NC	163,000	423,000	4,200,000
TOTAL NUMBER OF SV TICS	18	18	18	NC	NC	20	20	20
TOTAL SV TIC CONCENTRATION	37,590	12,750	14,390	NC	NC	1,115,000	2,558,000	22,580,000
Tot.Petroleum Hydrocarbon (TPHC)(mg/kg)	5,360 J	131 J	83 J	NC	NC	21,000 J	57,200 J	85,400 J
TOT.ORGANIC(VOC+SVOC+TPHC)(mg/kg)	5,401	145	98	NC	NC	22,279	60,482	112,185
TOTAL ORGANIC CARBON (mg/kg)	26,300	7460	47,600	NC	NC	15,600	73,800	55,300
INORGANICS (mg/kg)(1)(2)								
ANTIMONY	4.8 UJ	3.8 UJ	4.5 UJ	2	25	3.6 UJ	3.4 J	3.2 UJ
ARSENIC	5.1 J	5.1	5.8	33	85	13.1	10.4	9.5
BARIUM	101.0 J	64.0	117.0	NC	NC	13.9	168.0	86.3
BERYLLIUM	2.4 J	2.2	2.5	NC	NC	1.2	1.9	1.6
CADMIUM	0.8 UJ	0.6 U	0.8 U	5	9	0.6 U	2.8	1.8
CHROMIUM	125.0 J	108.0	122.0	80	145	68.1	103.0	98.8
COBALT	4.0 J	2.7	3.5	NC	NC	1.7	4.9	3.6
COPPER	12.1 J	5.3	5.1	70	390	2.8	43.9	28.6
LEAD	28.4 J	11.0	13.8	35	110	8.6	385.0	125.0
MANGANESE	56.4 J	39.2	47.3	NC	NC	24.1	168.0	127.0
MERCURY	0.2 UJ	0.1 U	0.2 U	0.15	1.3	0.1 U	0.2	0.1 U
NICKEL	12.4 J	7.6	11.2	30	50	4.7	12.8	10.2
SELENIUM	0.7 J	0.6	0.8	NC	NC	0.8	0.7	0.6
VANADIUM	49.9 J	43.5	48.7	NC	NC	42.7	54.8	53.7
ZINC	103.0 J	108.0 J	82.8 J	120	270	33.2 J	283.0 J	180.0 J

Notes:
U = NOT DETECTED,
J = ESTIMATED VALUE,
R = REJECTED (UNUSABLE) DATUM,
NC = NO CRITERION.

Shading indicates exceedance of applicable criterion.

(1) - Contaminants listed are those detected in soil samples.

(2) - TAL crustal abundant metals (aluminum, calcium, iron, magnesium, potassium, and sodium) not tabulated.

Table 10
SUMMARY OF COMPOUNDS OF CONCERN IN SURFACE SOILS
BASED ON CONCENTRATION/TOXICITY SCREENING AND RISK BASED CONCENTRATIONS

Potential Compounds of Concern in Surface Soils(1)	Risk Based Concentrations Residential Soil Ingestion(2) (mg/kg)	Maximum Conc. (mg/kg)	Compound of Concern(3)	Risk Based Concentrations Ambient Air (ug/m3)	Maximum Air Conc. (ug/m3)	Compound of Concern
INORGANICS						
BERYLLIUM	0.015	1.70	Yes	7.50E-05	1.66E-04	Yes
CADMIUM	3.9	0.88		9.90E-05	8.58E-05	
CHROMIUM (Cr III @ 85%)		84.32		2.10E-04	8.22E-03	Yes
CHROMIUM (Cr VI @ 15%)	39	14.88		1.50E-05	1.45E-03	Yes
COPPER	290	116.00		1.40E+01	1.13E-02	
VANADIUM PENTOXIDE	70	54.70		3.30E+00	5.33E.03	
ZINC AND COMPOUNDS	2300	201.00		1.10E+02	1.96E.02	
SEMIVOLATILE ORGANICS						
BENZO(A)ANTHRACENE	0.088	0.44	Yes	1.00E-03	4.29E.05	
BENZO(A)PYRENE	0.0088	0.37	Yes	1.00E-04	3.61E-05	
BENZO(B)FLUORANTHENE	0.088	0.82	Yes	1.00E-03	8.00E-05	
BIS(2-ETHYLHEXYL)PHTHALATE	4.6	58.00	Yes	4.50E-02	5.66E-03	
BUTYLBENZYLPHATHALATE	1600	270.00		7.30E+01	2.63E-02	
DI-N-OCTYLPHTHALATE	160	500.00	Yes	7.30E+00	4.88E-02	
DIBENZO(A,H)ANTHRACENE	0.0088	0.14	Yes	1.00E-04	1.37E-05	
INDENO(1,2,3-CD)PYRENE	0.088	0.28	Yes	1.00E-03	2.73E-05	
TIC PHTHALATES	Not Available	2803.00	Yes	Not Available	2.73E-01	
TIC BENZENE DERIV.	Not Available	162.00	Yes	Not Available	1.58E-02	

Notes:

(1) Based on concentration/toxicity screening.

(2) Based on a 0.1 hazard quotient or a 10' cancer risk. (USEPA Region III "Risk Based Concentration Table, January - June 1995" correspondence by Roy L. Smith, PH. D. dated March, 1995.)

(3) Indicates selected as a compound of concern, i.e. , the maximum concentration is greater than the risk based concentration.

Table 11
SUMMARY OF COMPOUNDS OF CONCERN IN SURFACE SOILS
BASED ON CONCENTRATION/TOXICITY SCREENING AND RISK BASED CONCENTRATIONS

Potential Compounds of Concern in Surface Soils (1)	Risk Based Concentrations Residential Soil Ingestion(2) (mg/kg)	Maximum Conc. (mg/kg)	Compound Of Concern(3) Ingestion	Risk Based Concentrations Ambient Air(2) (mg/m3)	Maximum Air Conc. (mg/m3)	Compound of Concern(3) Inhalation
INORGANICS						
ANTIMONY	3.1	3.3	Yes	1.50E-05	3.22E-04	
CHROMIUM (CrIII @ 85%)				2.10E-04	8.37E-03	Yes
CHROMIUM (Cr VI @ 15%	39	15.2		1.50E-05	1.48E-03	Tes
COPPER	290	12.1		1.40E+01	1.17E-03	
SELENIUM AND COMPOUNDS	39	2.3		1.80E+00	2.24E-04	
VANADIUM PENTOXIDE	70	52.8		3.30E+00	5.15E-03	
VOLATILE ORGANICS						
TRICHLOROETHENE	5.8	0.0		1.00E-01	9.75E-08	
SEMIVOLATILE ORGANICS						
DI-N-OCTYLPHTALATE	160	65.0		7.30E+00	6.34E-03	
ISOPHORONE	67	0.0		6.60E-01	4.00E-06	
TIC BENZENE DERIV	Not Available	46.0			4.49E-03	
TIC PHTHALATES	Not Available	773.0	Yes		7.54E-02	

Notes:
(1) Based on concentration/ toxicity screening.

(2) Based on a 0.1 hazard quotient or a 10-7 cancer risk. (USEPA Region III "Risk Based Concentration Table, January - June 1995" correspondence by Roy L. Smith, Ph. D. dated March 7, 1995.)

(3) Indicates selected as a compound of concern, i.e. , the maximum concentration is greater than the risk based concentration.

Table 12
SUMMARY OF COMP0UNDS OF CONCERN IN LAGOON SEDIMENT
BASED ON TOXICITY SCREENING AND RISK BASED CONCENTRATIONS

Potential Compounds at Concern in Lagoon "1" INGESTION	Risk Based Concentrations Residential Soil Ingestion(2) (mg/kg)	Maximum Conc. (mg/kg)	Compound of Concern(3)
VOLATILE ORGANICS			
1, 1, 1 -TRICHLOROETHANE	700	1600	Yes
1,2-CHLOPOETHENE (TOTAL)	70	1100	Yes
ETHYLBENZENE	780	1300	Yes
TETRACHLOROETHENE	1.2	230	Yes
TOLUENE	1600	2200	Yes
TRICHLOROETHENE	5.8	3100	Yes
SEMIVOLATILE ORGANICS			
BUTYLBENZYLPHTHALATE	1600	31000	Yes
DI-N-OCTYLPHTHALATE	160	4400	Yes
TIC BENZENE DERIV.	Not Available	680	Yes
TIC PHTHALATES	Not Available	6660	Yes

Potential Compounds of Cancer in Lagoon(4) INHALATION	Risk Based Concentrations Ambient Air(2) (ug/m3)	On -Site Receptor Maximum Conc.(5) (ug/m3)	On-Site Receptor Compound of Concern(3)	Off-Site Receptor Maximum Conc.(3) (ug/m3)	Off-Site Receptor Compound of Concern(2)
VOLATlLE ORGANICS					
1,1-D1CHLOROETHANE	52	9.7E+01	Yes	2.2E+00	
1,2-DICHLOROETHENE (TOTAL)	3.7	4.7E+03	Yes	1.1E+02	Yes
1,1,1 -TRICHLOROETHANE	100	4.9E+03	Yes	1.1E+02	Yes
TRICHLOROETHENE	0.1	5.4E+03	Yes	1.2E+02	Yes
TETRACHLOROETHENE	0.31	1.4E+02	Yes	3.3E+00	Yes
TOLUENE	42	7.0E+02	Yes	1.6E+01	
ETHYLBENZENE	100	1.5E+02	Yes	3.5E+00	
XYLENES (Total)	730(8)	5.2E+02		I.2E+01	
SENVOLATILE ORGANICS					
PHENOL	220	4.1E-01		9.4E-03	
1,2-DICHLOROBENZENE	15	NQ(7)		NQ(7)	
NAPHTHALENE	15	NQ(7)		NQ(7)	
2-METHYLNAPHTHALENE	Not Available	NQ(7)		NQ(7)	
ANTHRACENE	110	NQ(7)		NQ(7)	
DI-N-BUTYLPHTHALATE	Not Available	NQ(7)		NQ(7)	
BUTYLBENZYLPHTHALATE	73	NQ(7)		NQ(7)	
DI-N-OCTYLPHTHALATE	7.3	NQ(7)		NQ(7)	

TIC BENZENE DERIV.	Not Available	NQ(7)	NQ(7)
TIC PHTHALATES	Not Available	NQ(7)	NQ(7)

Notes:
(1) Based on concentration/toxicity screening
(2) Based on a 0.1 hazard quotient or a 10-7 cancer risk (USEPA Region III *Risk Based Concentration Table, January-June 1995* correspondence by Roy L. Smith, Ph. D. dated March 7, 1995.)
(3) Indicates selected as a compound of concern, i.e., the maximum concentration is greater than the risk based concentration.
(4) Only used volatile compounds which were detected in lagoon sediment at 10 ppm or greater.
(5) Calculated using model discussed in text for on-site receptors (USEPA, Guidance Nov. 1992, A Workshop on Air Pathway Analysis at Superfund Sites).
(6) Calculated using model discussed in text for off-site receptors (USEPA, Guidance Nov. 1992, A Workshop on Air Pathway Analysis at Superfund Sites).
(7) NQ = Not Quantifiable
(8) Risk-based concentration for mixed xylenes.

Table 13
SUMMARY OF COMPOUNDS OF CONCERN IN DITCH, MARSH AND INTERMITTENT STREAM SOILS
BASED ON CONCENTRATION/TOXICITY SCREENING AND RISK BASED CONCENTRATIONS

Potential Compounds of Concern in Marsh(1)	Risk Based Concentrations Residential Soil Ingestion(2) (mg/kq)	Maximum Conc. (mg/kg)	Compound of Concern(3)
INORGANICS			
ANTIMONY	3.1	3.4	Yes
BERYLLIUM	0.015	2.3	Yes
CADMIUM	3.9	2.8	
CHROMIUM (Cr VI@ 15%)	39	19.65	
COPPER	290	43.9	
VANADIUM PENTOXIDE	70	63.9	
VOLATILE ORGANICS			
1.2-DICHLOROETHENE (TOTAL)	70	20	
VINYL CHLORIDE	0.034	0.83	Yes
SEMIVOLATLE ORGANICS			
BIS(2-ETHYLHEXY)PHTHALATE	4.6	8.6	Yes
BUTYLBENZYLPHTHALATE	1600	1950	Yes
DI-N-OCTYLPHTHALATE	160	1600	Yes
TIC BENZENE DERIV.	NA	41	Yes
TIC PHTHALATES	NA	9771	Yes

Notes:

(1) Based on concentration/toxicity screening.

(2) Based on a 0.1 hazard quotient or a 10.7 cancer risk. (USEPA Region III "Risk Based Concentration Table. January - June 1995" correspondence by Roy L. Smith, Ph.D. dated March 7, 1995.)

(3) Indicates selected as a compound fo concern, i.e., the maximum concentration is greater than the risk based concentration.

Table 14
SUMMARY-OF-COMPOUNDS OF CONCERN IN NAVESINK MARL GROUNDWATER
BASED ON CONCENTRATION/TOXICITY SCREENING AND RISK BASED CONCENTRATIONS

Shower Model
Whole House Model
Potential Compounds of Concern in Nacasink Mart(1) | Risk Based Concentrations Tap Water(2) | Maximum Conc. (ug/1) | Compound Risk Based of Concern(3) | Concentrations Ambrietn Air(2) (ug/1) | Maximum Air Conc. Ingestion | Compound of Concern(3) (ug/m3) | Maximum Air Conc. Inhalation | Compound of Concern(3) (ug/m3) Inhalation

INORGANICS								
BERYLLIUM	1.60E-03	300E+00	Yes	7.50E-05				
CHROMIUM (Cr VI@ 15%)	1.80E+01	227E+01	Yes	1.50E-05				
COPPER	1.40E+02	6.37E+01		1.40E+01				
SELENIUM AND COMPOUNDS	1.80E+01	1.80E+00		1.80E+00				
VANADIUM PENTOXIDE	3.30E+01	5.61E+01	Yes	3.30E+00				
ZINC AND COMPOUNDS	1.10E+03	1.72E+02		1.10E+02				
CYANIDE, FREE	7.30E+01	6.90E+00		7.30E+00				
VOLATILE ORGANICS								
1,1-DICHLOROETHANE	8.10E+01	4.00E+00		5.20E+01	9.8E+01	Yes	1.5E+00	
1,2-DICHLOROETHENE (TOTAL)	5.50E+00	9.70E+01	Yes	3.30E+00	2.1E+03	Yes	1.1E+01	Yes
TETRACHLOROETHENE	1.10E-01	4.00E+00	Yes	3.10E-01	8.0E+01	Yes	1.3E+00	Yes
TRICHLOROETHENE	1.60E-01	1.60E+01	Yes	1.00E-01	3.5E+02	Yes	2.9E+00	Yes
VINYL CHLORIDE	1.90E-03	2.05E+01	Yes	2.10E-03	8.3E+02	Yes	6.3E+00	Yes
BENZENE	3.60E-02	1.00E+00		2.20E-02	2.4E+01	Yes	3.7E-01	Yes
SEMIVOLATILE ORGANICS								
ISOPHORONE	7.10E+00	6.70E+02	Yes	6.60E-01				

Notes:
(1) Based on concentration/toxicity screening.

(2) Based on a 0.1 hazard quotient or a 10' cancer risk (USEPA Region III "Risk Based Concentration Table. January-June 1995" correspondence by Roy L. Smith, Ph.d. dated March 7, 1995.)

(3) Indicates selected as a compound of concern, i.e., the maximum concentration is greater than the risk based concentration.

Table 15
SUMMARY OF COMPOUNDS OF CONCERN IN WENONAH-MT. LAUREL GROUNDWATER
BASED ON TOXICITY SCREENING AND RISK BASED CONCENTRATIONS

Potential Compounds of Concern in Wenonah-Mt. Laurel Groundwater(1)	Risk Based Concentrations Tap Water(2) (ug/L)	Maximum Conc. (ug/L)	Compound of Concern(3)
INORGANICS			
CHROMIUM (CrIII @ 85%)	3700	115.6	
CHROMIUM (Cr VI @ 15%)	18	20.4	Yes
COPPER	140	11.9	
CYANIDE, FREE	73	5	

Notes:

(1) Based on concentration/loxicity, screening.

(2) Based on a 0.1 hazard quotient or a 10.7 cancer risk. (USEPA Region III "Risk Based Concentration Table, January-June 1995" correspondence by Roy L. Smith, Ph. D. dated March 7, 1995.)

(3) Indicates selected as a compound of concern. i.e., the maximum concentration is greater than the risk based concentration.

Table 16
SUMMARY OF FINAL COMPOUNDS OF CONCERN

FOR ALL MEDIA

Compound	Surface Soil	Subsurface Soil	Lagoon	Ditch, Marsh & Stream	Navesink Marl	Wenonah-Mt. Laurel
			Matrix			
INORGANICS						
ANTIMONY		v		v		
BERYLLIUM	v			v	v	
CHROMIUM (Cr III @ 85%)	v	v				
CHROMIUM (Cr VI @ 15%)	v	v			v	v
VANADIUM PENTOXIDE					v	
VOLATILE ORGANICS						
1,1-DICHLOROETHANE			v		v	
1,2 DICHLOROETHENE (TOTAL)			v		v	
1,1,1-TRRICHLOROETHANE			v			
TRICHLOROETHENE			v		v	
TETRACHLOROETHENE			v		v	
TOLUENE			v			
ETHYLBENZENE			v			
VINYL CHLORIDE				v	v	
BENZENE					v	
SEMIVOLATILE ORGANICS						
BENZO(A)ANTHRACENE	v					
BENZO(A)PYRENE	v					
BENZO(B)FLUORANTHENE	v					
DEBENZO(A,H)ANTHRACENE	v					
INDENO(1,2,3-CD)PYRENE	v					
ISOPHORONE				v		
BIS(2-ETHYLHEXYL)PHTHALATE	v			v		
BUTYLBENZYLPHTHALATE			v	v		
DI-N-OCTYLPHTHALATE	v		v	v		
TIC BENZENE DERIV.	v	v	v	v		
TIC PHTHALATES	v	v	v	v		

Notes:

v = Compound of Concern

Table 17
KAUFFMAN & MINTEER SITE
SUMMARY OF STATISTICS FOR COMPOUNDS OF CONCERN
SURFACE SOILS

COMPOUND	FREQUENCY(1) OF OCCURRENCE	MAXIUMUM DETECTED CONC.	GEOMETRIC MEAN(2)	ARITHMETIC MEAN(2)	95% UCL(2)	MEHTOD OF UCL CALC (3)	W TEST STATISTIC UN-TRANSFORMED	W TEST STATISTIC LOG TRANSFORMED	EXPOSURE POINT CONC.(4)
INORGANICS (mg/kg)									
BERYLLIUM	11/14	1.70E+00	5.29E-01	6.10E-01	8.49E-01	LN	7.85E-01	9.26E-01	8.49E-01
CHROMIUM(5)	14/14	9.92E+01	2.65E+01	3.07E+01	4.13E+01	LN	6.74E-01	9.18E-01	4.13E+01
CHROMIUM (Cr III @ 85%)					3.51E+00				
CHROMIUM (Cr VI @15 %)					6.19E+00				
SEMIVOLATILE ORGANICS (ug/kg)									
DI-N-OCYLPHTHALATE	9/14	5.00E+05	4.62E+05	4.47E+04	1.03E+08	LN	3.89E-01	8.42E-01	5.00E+05
BENZO(A)ANTHRACENE	2/14	4.40E+02	6.52E+01	1.48E+02	5.56E+02	LN	7.00E-01	7.79E-01	4.40E+02
BENZO(A)PYRENE	2/14	3.70E+02	6.42E+01	1.43E+02	5.13E+02	LN	7.03E-01	7.82E-01	3.70E+02
BENZO(B)FLUORANTHENE	2/14	8.20E+02	7.18E+01	1.88E+02	9.01E+02	LN	7.19E-01	7.82E-01	8.20E+02
BIS(2-ETHYLHEXYL)PHTHALATE	5/14	5.80E+04	2.75E+02	8.32E+03	3.44E+07	LN	5.59E-01	7.69E-01	5.80E+04
DIBENZO(A,H)ANTHRACENE	1/14	1.40E+02	5.13E+01	1.16E+02	3.32E+02	LN	6.39E-01	7.61E-01	1.40E+02
INDENO(1,2,3-CD)PYRENE	2/14	2.80E+02	6.12E+01	1.33E+02	4.31E+02	LN	7.05E-01	7.99E-01	2.80E+02
TIC BENZENE DERIV	5/14	1.62E+05		1.33E+04					1.62E+05
TIC PHTHALATES	6/14	2.80E+06		2.37E+05					2.80E+06

Notes:
(1) Frequency = Number of Detections/Total number of Samples Analyzed.

(2) Non-detects are incorporated into mean and 95% Upper Confidence Limit calculations as 50% of the Contract Required Detection Limits (CRDLs) except as noted in the text.

(3) Method selected based on visual data review (see text for discussion). LN = lognormal distribution.

(4) The actual high end risk exposure-point concentration used in subsequent calculations is the lesser of the UCL calculated and the maximum value detected.

(5) Chromium is assumed to occur as 15?7 chromium (VI) and 85% chromium (III).

Table 18
KAUFFMAN & MINTEER SITE
SUMMARY OF STATISTICS FOR COMPOUNDS OF CONCERN
SURFACE SOILS

COMPOUND	FREQUENCY(1) OF OCCURRENCE	MAXIUMUM DETECTED CONC.	GEOMETRIC MEAN(2)	ARITHMETIC MEAN(2)	95% UCL(2)	MEHTOD OF UCL CALC (3)	W TEST STATISTIC UN-TRANSFORMED	W TEST STATISTIC LOG TRANSFORMED	EXPOSURE POINT CONC.(4)
INORGANIC ANALYTES(mmg/kg)									
ANTIMONY	1/15	3.30E+00	4.10E+00	4.25E+00	4.68E+00		8.25E-01	6.84E-01	3.30E+00
CHROMIUM(5)	15/15	1.01E+02	5.46E+01	5.92E+01	7.35E+01		8.49E+01	9.10E-01	7.35E+01
CHROMIUM (Cr III @ 85%)					6.25E+01				
CHROMIUM (Cr VI @ 15%)					1.10E+01				
SEMIVOLATILE ORGANICS(ug/kg)									
TIC BENZENE DERIV	5/15	4.60E+04	9.37E+03		4.60E+04				
TIC PHTHALATES	2/15	7.73E+05	3.87E+05		4.60E+04				

Notes:

(1) Frequency = Number of Detections/toatal Number of Samples Analyzed.

(2) Non-detects are incorporated into mean and 95% Upper cofidence Limit calculations as 50% of the Contract Required Detection Limits (CRDLs) except as noted in the text.

(3) Method selected based on visual data review (see text for discussion). LN = lognormal distribution.

(4) The actual high end risk exposure-point concentration used in subsequent calculations is the lesser of the UCL calculated and the maximum value detected.

(5) Chromium is assumed to occur as 15% chromium (VI) and 85% chromium (III).

Table 19
KAUFFMAN & MINTEER SITE
SUMMARY OF STATISTICS FOR COMPOUNDS OF CONCERN
SURFACE SOILS

COMPOUND	FREQUENCY(1) OF OCCURRENCE	MAXIUMUM DETECTED CONC.	GEOMETRIC MEAN(2)	ARITHMETIC MEAN(2)	95% UCL(2)	METHOD OF UCL CALC (3)	W TEST STATISTIC UN-TRANSFORMED	W TEST STATISTIC LOG TRANSFORMED	EXPOSURE POINT CONC.(4)
VOLATILE ORGANICS (ug/kg)									
ETHYLBENZENE	5/5	1.30E+06	7.72E+03	2.62E+05	2.54E+14	LN	5.54E-01	7.39E-01	1.30E+06
TETRACHLOROETHENE	1/5	2.30E+05	4.85E+02	4.61E+04	2.30E+17	LN	5.52E-01	6.17E-01	2.30E+05
TOLUENE	5/5	2.20E+06	4.89E+03	4.41E+05	1.78E+18	LN	5.53E-01	6.74E-01	2.20E+06
1,2-DICHLOROETHENE (TOTAL)	2/5	1.10E+06	7.62E+02	2.20E+05	1.98E+23	LN	5.52E-01	6.26E-01	1.10E+06
1,1,1-TRICHLOROETHANE	1/5	1.60E+06	7.15E+02	3.20E+05	5.65E+25	LN	5.52E-01	6.04E-01	1.60E+06
TRICHLOROETHENE	1/5	3.10E+06	5.15E+02	6.20E+05	2.06E+33	LN	5.52E-01	7.56E-01	3.10E+06
1,1-DICHLOROETHANE	1/5	2.70E+04	3.16E+02	5.49E+03	1.70E+10	LN	5.55E-01	6.40E-01	2.70E+04
SEMIVOLATILE ORGANICS (ug/kg)									
BUTYBENZYLPHTHALATE	5/5	3.10E+07	1.03E+06	6.59E+06	5.85E+10	LN	5.65E-01	7.65E-01	3.10E+07
DI-N-OCTYLPHTHALATE	5/5	4.40E+06	1.58E+05	9.43E+05	7.31E+09	LN	5.68E-01	7.98E-01	4.40E+06
TIC BENZENE DERIVATIVES	4/5	6.80E+05	1.81E+05	6.80E+05					
TIC PHTHALATES	5/5	6.66E+06	1.66E+06	6.66E+06					

Notes:
(1) Frequency = Number of Detections/Total Number of Samples Analyzed.
(2) Non-etects are incorporated into mean and 95% Upper Confidence Limit calculations as 50% of the Contact Required Detection Limits (CRDLs) except as noted in the text.
(3) Method selected based on visual data review (see text for discussion). LN = lognormal distribution.
(40 The actual high end risk exposure-point concentration used in subsequent calculations is the lesser of the UCL calculated and the maximum value detected.

Table 20

KAUFFMAN & MINTEER SITE
SUMMARY OF STATISTICS FOR COMPOUNDS OF CONCERN
DITCH & MARSH SOILS

COMPOUND	FREQUENCY OF OCCURRENCE	MAXIMUM DETECTED CONC.	GEOMETRIC MEAN²	ARITHMETIC MEAN²	95% UCL²	METHOD OF UCL CALC.	W TEST STATISTIC UN-TRANSFORMED	W TEST STATISTIC LOG TRANSFORMED	EXPOSURE POINT CONC.
INORGANICS (mg/kg)									
ANTIMONY	2/15	3.40E+00	3.10E+00	3.60E+00	5.04E+00	LN	8.38E-01	8.49E-01	3.40E+00
BERYLLIUM	15/15	2.30E+00	1.18E+00	1.26E+00	1.53E+00	LN	9.53E-01	9.79E-01	1.53E+00
VOLATILE ORGANICS (ug/kg)									
VINYL CHLORIDE	1/15	8.30E+02	1.37E+00	5.62E+01	5.51E+01	LN	2.86E-01	4.05E-01	5.51E+01
SEMIVOLATILE ORGANICS (ug/kg)									
BUTYLBENZYLPHTHALATE	8/15	1.95E+06	1.28E+03	1.79E+05	7.94E+10	LN	4.13E-01	8.37E-01	1.95E+06
BIS(2-ETHYLHEXYL)PHTHALATE	2/15	8.60E+03	2.73E+02	2.73E+03	1.41E+05	LN	5.40E-01	8.47E-01	8.60E+03
DI-N-OCTYLPHTHALATE	11/15	1.60E+06	5.15E+03	1.84E+05	3.40E+10	LN	5.11E-01	8.96E-01	1.60E+06
TIC BENZENE DERIV	7/15	4.10E+04		5.56E+03					4.10E+04
TIC PHTHALATES	9/15	9.77E+06		1.27E+06					9.77E+06

Notes:

(1) Frequency = Number of Detections/Total Number of Samples Analyzed.

(2) Non-detects are incorporated into mean and 95% Upper Confidence Limit calculations as 50% of the Contract Required Detection Limits (CRDLs) except as noted in the text.

(3) Method selected based on visual data review (see text for discussion). LN = lognormal distribution.

(4) The actual high end risk exposure-point concentration used in subsequent calculations is the lesser of the UCL calculated and the maximum value detected.

Table 21
KAUFFMAN & MINTEER SITE
SUMMARY OF STATISTICS FOR COMPOUNDS OF CONCERN
LAGOON SEDIMENTS & SURFACE SOILS

COMPOUND	FREQUENCY OF OCCURRENCE	MAXIMUM DETECTED CONC.	GEOMETRIC MEAN²	ARITHMETIC MEAN²	95% UCL²	METHOD OF UCL CALC.3	W TEST STATISTIC UN-TRANSFORMED	W TEST STATISTIC LOG TRANSFORMED	EXPOSURE POINT CONC.
INORGANICS (mg/kg)									
BERYLLIUM	16/19	1.70E+00	6.06E-01	6.83E-01	8.91E-01	LN	8.87E-01	9.32E-01	8.91E-01
CHROMIUM(5)	19/19	9.92E+01	2.98E+01	3.39E+01	4.31E+01	LN	8.03E-01	9.70E-01	4.31E+01
CHROMIUM (Cr III @ 85%)									3.67E+01
CHROMIUM (Cr VI @ 15%)									6.47E+00
VOLATILE ORGANICS (ug/kg)									
ETHYLBENZENE	6/19	1.30E+06	3.83E+01	6.90E+04	7.77E+06	LN	2.46E-01	6.22E-01	1.30E+03
TETRACHLOROETHENE	2/19	2.30E+05	1.80E+01	1.21E+04	1.45E+04	LN	2.45E-01	5.67E-01	1.45E+04
TOLUENE	8/19	2.20E+06	3.84E+01	1.16E+05	4.25E+06	LN	2.45E-01	6.93E-01	2.20E+06
1,2-DICHLOROETHENE (TOTAL)	3/19	1.10E+06	2.04E+01	5.79E+04	1.02E+05	LN	2.44E-01	5.47E-01	1.02E+05
1,1,1-TRICHLOROETHANE	1/19	1.60E+06	2.07E+01	8.42E+04	1.28E+05	LN	2.44E-01	5.01E-01	1.28E+05
TRICHLOROETHENE	1/19	3.10E+06	1.90E+01	1.63E+05	2.47E+05	LN	2.44E-01	4.55E-01	2.47E+05
SEMIVOLATILE ORGANICS (ug/kg)									
DI-N-OCTYLPHTHALATE	14/19	4.40E+06	2.15E+03	2.81E+05	9.58E+09	LN	3.05E-01	8.95E-01	4.40E+06
BENZO(A)ANTHRACENE	2/19	4.40E+02	1.55E+02	1.18E+03	8.12E+03	LN	3.78E-01	8.77E-01	4.40E+02
BENZO(A)PYRENE	2/19	3.70E+02	1.53E+02	1.17E+03	7.88E+03	LN	3.77E-01	8.78E-01	3.70E+02
BENZO(B)FLUORANTHENE	2/19	8.20E+02	1.67E+02	1.20E+03	9.83E+03	LN	3.85E-01	8.72E-01	8.20E+02
BIS(2-ETHLHEXYL)PHTHALATE	5/19	5.80E+04	4.49E+02	7.19E+03	2.25E+06	LN	5.47E-01	8.60E-01	5.80E+04
BUTYLBENZYLPHTHALATE	13/19	3.10E+07	2.36E+03	1.75E+06	6.98E+11	LN	2.64E-01	8.71E-01	3.10E+07
DIBENZO(A,H)ANTHRACENE	1/19	1.40E+02	1.30E+02	1.15E+03	7.93E+03	LN	3.76E-01	8.55E-01	1.40E+02
INDENO(1,2,3-CD)PYRENE	2/19	2.80E+02	1.48E+02	1.16E+03	7.48E+03	LN	3.77E-01	8.80E-01	2.80E+02
TIC BENZENE DERIV.	9/19	6.80E+05		1.01E+05					6.80E+05
TIC PHTHALATES	11/19	6.66E+06		1.06E+06					6.66E+06

Notes:
(1) Frequency = Number of Detections/Total Number of Samples Analyzed.
(2) Non-detects are incorporated into mean and 95% Upper Confidence Limit calculations as 50% of the Contract Required Detection Limits (CRDLs) except as noted in the text.
(3) Method selected based on visual data review (see text for discussion). LN = lognormal distribution.
(4) The actual high end risk exposure-point concentration used in subsequent calculations is the lesser of the UCL calculated and the maximum value detected.
(5) Chromium is assumed to occur as 15% chromium (VI) and 85% chromium (III).

Table 22
KAUFFMAN & MINTEER SITE
SUMMARY OF STATISTICS FOR COMPOUNDS OF CONCERN
NAVESINK MARL GROUNDWATER

COMPOUND	FREQUENCY OF OCCURRENCE	MAXIMUM DETECTED CONC.	GEOMETRIC MEAN²	ARITHMETIC MEAN²	95% UCL²	METHOD OF UCL CALC.	W TEST STATISTIC UN-TRANSFORMED	W TEST STATISTIC LOG TRANSFORMED	EXPOSURE POINT CONC.
INORGANICS (ug/kg)									
BERYLLIUM	4/9	3.00E+00	9.55E-01	1.26E+00	1.85E+00	NORMAL	7.87E-01	7.50E-01	1.85E+00
CHROMIUM	7/9	1.51E+02	3.20E+01	5.78E+01	8.79E+01	NORMAL	9.38E-01	8.37E-01	8.79E+01
CHROMIUM (Cr VI@15%)									1.32E+01
VANADIUM PENTOXIDE	8/9	5.61E+01	1.57E+01	2.33E+01	3.48E+01	NORMAL	9.17E-01	9.17E-01	3.48E+01
VOLATILE ORGANICS (ug/L)									
1,2-DICHLOROETHENE (TOTAL)	1/9	9.70E+01	6.95E+00	1.52E+01	3.42E+01	NORMAL	3.90E-01	3.90E-01	3.42E+01
TETRACHLOROETHENE	1/9	4.00E+00	4.88E+00	4.89E+00	5.10E+00	NORMAL	3.90E-01	3.90E-01	4.00E+00
TRICHLOROETHENE	1/9	1.60E+01	5.69E+00	6.22E+00	8.50E+00	NORMAL	3.90E-01	3.90E-01	8.50E+00
VINYL CHLORIDE	1/9	2.05E+01	5.85E+00	6.72E+00	9.93E+00	NORMAL	3.90E-01	3.90E-01	9.93E+00
BENZENE	1/9	1.00E+00	4.18E+00	4.56E+00	5.38E+00	NORMAL	3.90E-01	3.90E-01	1.00E+00
1,1-DICHLOROETHANE	1/9	4.00E+00	4.88E+00	4.89E+00	5.10E+00	NORMAL	3.90E-01	3.90E-01	4.00E+00
SEMIVOLATILE ORGANICS (ug/L)									
ISOPHORONE	1/9	6.70E+02	1.11E+00	7.49E+01	2.13E+02	NORMAL	3.90E-01	3.90E-01	2.13E+02

Notes:
(1) Frequency = Number of Detections/Total Number of Samples Analyzed.
(2) Non-detects are incorporated into mean and 95% Upper Confidence Limit calculations as 50% of the Contract Required Detection Limits (CRDLs) except as noted in the text.
(3) Method selected based on visual data review (see text for discussion). LN = lognormal distribution.
(4) The actual high end risk exposure-point concentration used in subsequent calculations is the lesser of the UCL calculated and the maximum value detected.
(5) Chromium is assumed to occur as 15% chromium (VI) and 85% chromium (III).

Table 23
KAUFFMAN & MINTEER SITE
SUMMARY OF STATISTICS FOR COMPOUNDS OF CONCERN
WENONAH-MT. LAUREL GROUNDWATER

COMPOUND	FREQUENCY 1 OF OCCURRENCE	MAXIMUM DETECTED CONC.	GEOMETRIC MEAN²	ARITHMETIC MEAN²	95% UCL²	METHOD OF UCL CALC.	W TEST STATISTIC UN-TRANSFORMED	W TEST STATISTIC LOG TRANSFORMED	EXPOSURE POINT CONC.
INORGANICS (ug/L)									
CHROMIUM 5	1/3	1.36E+02	1.07E+02	4.73E+01	1.77E+02	NORMAL	7.50E-01	7.50E-01	1.36E+02
CHROMIUM (Cr VI@ 15%)									2.04E+01

Notes:

(1) Frequency = Number of Detections/Total Number of Samples Analyzed.

(2) Non-detects are incorporated into mean and 95% Upper Confidence Limit calculations as 50% of the Contract Required DetectionLimits (CRDLs) except as noted in the text.

(3) Method selected based on visual data review (see text for discussion). LN = lognormal distribution. N = Normal distribution.

(4) The actual high end risk exposure-point concentration used in subsequent calculations is the lesser of the UCL calculated and the maximum value detected.

(5) Chromium is assumed to occur as 15% chromium (VI) and 85% chromium (III).

Table 24
KAUFFMAN & MINTEER SITE RI/FS
TOXICITY VALUES FOR POTENTIAL NONCARCINOGENIC EFFECTS

Compound	Chronic RfD (mg/kg-day)	IRIS Confidence Level	Critical Effect	RfD Source	Uncertainty and Modifying Factors
ORAL ROUTE					
INORGANICS					
ANTIMONY	4.0E-4	Low	Blood Glucose and Cholesterol Levels; Myocardia; longevity; Reproductive System	IRIS	UF=1000;MF=1
BERYLLIUM	5.0E-3	Low	No Adverse Effect Observed	IRIS	UF=100; MF=1
CHROMIUM (Cr VI@15%)	5.0E-3	Low	No Reported Effects	IRIS	UF=500; MF=1
VANADIUM PENTOXIDE	9.0E-3	Low	Decreased Hair Cystine	IRIS	UF=100; MF=1
VOLATILE ORGANICS					
1,2-DICHLOROETHENE (TOTAL)	9.03E-3		Hermatological Effects	HEAST	
1,1,1-TRICHLOROETHANE	Not Available		Hepatotoxicity; Gastrointestical		
TRICHLOROETHENE	Not Available		Liver; Kidney; Hermatological Effects		
TETRACHLOROETHENE	1.0E-2	Medium	Hepatotoxicity; Weight Gain	IRIS	UF=1000;MF=1
TOLUENE	2.0E-1	Medium	Liver and Kidney Weight Changes	IRIS	UF=1000;MF=1
ETHYLBENZENE	1.0E-1	Low	Liver and Kidney Toxicity	IRIS	UF=1000;MF=1
VINYL CHLORIDE	Not Available		Liver Damage		
SEMIVOLATILE ORGANICS					
BENZO(A)ANTHRACENE	Not Available				
BENZO(A)PYRENE	Not Available				
BENZO(B)FLUORANTHENE	Not Available				
DIBENZO(A,H)ANTHRACENE	Not Available				
INDENO(1,2,3-CD)PYRENE	Not Available				
ISOPHORONE	2.0E-1	Low	No Effect Observed	IRIS	UF=1000;MF=1
BIS(2-ETHYLHEXYL)PHTHALATE	2.0E-2	Medium	Liver Weight Increase	IRIS	UF=1000;MF=1
BUTYLBENZYLPHTHALATE	2.0E-1	Low	Significantly Increased Liver-to-Body Weight and Liver-to-weight Brain Ratios	IRIS	UF=1000;MF=1
DI-N-OCTYLPHTHALATE	2.0E-2		Liver and Kidney Weight Increase; Skin and Eye Irritations	HEAST	

INHALATION ROUTE

NORGANICS					
CHROMIUM (Cr III @ 85%)	Not Available		Possible Respiratory Effects		
CHROMIUM (Cr VI @ 15%)	Not Available				
VOLATILE ORGANICS					
1,1-DICHLOROETHANE	1.43E-1		Kidney Damage	Alternate Heast	
1,2-DICHLOROETHENE (TOTAL)	Not Available		Lung, Heart, Liver, Central Nervous System Effects		
1,1,1-TRICHLOROETHANE	Not Available		Central Nervous System Effects; Liver		
TRICHLOROETHENE	Not Available		Kidney and Liver Effects		
TETRACHLOROETHENE	Not Available		Enlarged Liver, Central Nervous System Effects		
TOLUENE	1.14E-1	Medium	Neurological Effects	IRIS	UF=300; MF=1
ETHYLBENZENE	2.86E-1	Low	Developmental Toxicity	IRIS	UF=300; MF=1
VINYL CHLORIDE			Central Nervous System, Liver, Birth Defects		
BENZENE	Not Available		Hematological Effects		

Table 25
KAUFFMAN & MINTEER SITE RI/FS
TOXICITY VALUES FOR POTENTIAL CARCINOGENIC EFFECTS

Compound	Slope Factor(SF) (mg/kg-day)-1	Weight-of-Evidence Classification	Type of Cancer	SF Source
ORAL ROUTE				
INORGANICS				
ANTIMONY	Not Available	D		
BERYLLIUM	4.3	B2	Lung Cancer	IRIS
CHROMIUM (Cr VI @ 15%)	Not Available	A	Lung Cancer	
VANADIUM PENTOXIDE	Not Available	D		
VOLATILE ORGANICS				
1,2-DICHLOROETHENE (TOTAL)	Not Available	D		
1,1,1-TRICHLOROETHANE	Not Available	D		
TRICHLOROETHENE	Not Available	Withdrawn/Under Review	Liver and Kidney Carcinoma; Leukemia	
TETRACLOROETHENE	Not Available	Under Review		
TOLUENE	Not Available	D		
ETHYL BENZENE	Not Available	D		
VINYL CHLORIDE	1.9	A	Liver Cancer	HEAST
SEMIVOLATILE ORGANICS				
BENZO(A)ANTHRACENE	Not Available	B2	Heptatoma/Pulmonary Adenomas(1)	
BENZO(A)PYRENE	7.3	B2	Lung Cancer: Site Tumors(1)	IRIS
BENZO(B)FLUORANTHENE	Not Available	B2	Site Sarcomas(1)	
DIBENZO(A,H)ANTHRACENE	Not Available	B2	Pulmonary Adenomas and Carcinomas; Mammary Carcinomas	
INDENO[1,2,3-CD)PYRENE	Not Available	B2	Site Sarcomas(1)	
ISOPHORONE	9.5 E-4	C	Preputial Gland Carcinomas	IRIS
BIS92-ETHYLHEXYL)PHTHALATE	1.4 E-2	B2	Hepatocellular and Adenoma; Liver Tumors	IRIS
BUTYLBENZYLPHTHALATE	Not Available	C	Leukemia (in female rats)	
DI-N-OCTYLPHTHALATE	Not Available	D		
INHALATION ROUTE				
INORGANICS				
CHROMIUM (Cr III @ 85%)	Not Available	Under Review		
CHROMIUM (Cr VI @ 15%)	4.2 E+1	A	Lung Cancer	IRIS

VOLATILE ORGANICS				
1,1-DICHLOROETHENE	Not Available	C	Mammary Gland Cancer; Liver Cancer(1)	
1,2-DICHLOROETHENE (TOTAL)	Not Available	D		
1,1,1-TRICHLOROETHANE	Not Available	D		
TRICHLOROETHENE	Not Available	Withdrawn/Under Review	Testicular, Lung, Liver Cancer	
TETRACHLOROETHENE	Not Available	Under Review		
TOLUENE	Not Available	D		
ETHYL BENZENE	Not Available	D		
VINYL CHLORIDE	3.0 E-1	A		
BENZENE	2.9 X 10-2	A	Leukemia	HEAST

Notes:
(1) Experimental animals were exposed by gavage, or intraperioneal, subcutaneous, or intramuscular injection.

EPA Weight of Evidence Classification are as follows:

Group A - Human Carcinogen. Sufficient evidence from epidemiological studies exists to support a casual association between exposure and cancer.

Group B1 - Probable human carcinogen. Limited evidence of carcinogenicity from epidemiological studies.

Group B2 - Probable human carcinogen. Sufficient evidence from animal studies and inadequate evidence from epidemiological studies.

Group C - Possible human carcinogen. Limited evidence of carcinogenicity in animals in the absence of human data.

Group D - Not Classifiable as to human carcinogenicity. Inadequate human and animal evidence of carcinogenicity or for which no data are available.

Group E - Evidence of noncarcinogenicity for humans. No evidence for carcinogenicity in at least two adequate animal tests in different species or in both adequate epidemiological and animal studies.

Table 26
KAUFFMAN & MINTEER SITE
SUMMARY OF RISKS
RESIDENTIAL EXPOSURE

PRESENT USE: HIGH END RISK

Pathway	Carcinogenic Adult	Noncarcinogenic Adult	Noncarcinogenic Child
Site Soils Fugitive Dust Inhalation	4.6E-07	NQ	NQ
Lagoon Sediment Volatiles Inhalation	IN	IN	IN
Navesink Marl Volatiles Inhalation			
Shower Inhalation	2.7E-06	6.3E-03	2.9E-02
Whole House Inhalation	1.3E-06	NQ	NQ
Navesink Marl Groundwater Ingestion	3.2E-04	3.3E-01	7.8E-01
Wenonah-Mt. Laurel Groundwater Ingestion	NQ	1.1E-01	2.7E-01
Total Risk*	3.2E-04	3.4E-01	8.1E-01

FUTURE USE: HIGH END RISK

Pathway	Carcinogen Adult	Noncarcinogenic Adult	Noncarcinogenic Child
Soils Fugitive Dust Inhalation	4.6E-07	NQ	NQ
Site Soils Ingestion	4.2E-06	3.9E-02	3.6E-01
Lagoon Sediment Volatiles Inhalation	NQ	2.0E+00	9.4E+00
Lagoon Sediment Ingestion	NQ	7.5E-01	7.0E+00
Navesink Marl Volatiles Inhalation			
Shower Inhalation	2.7E-06	6.3E-03	2.9E-02
Whole House Inhalation	1.3E-06	NQ	NQ
Navesink Marl Groundwater Ingestion	3.2E-04	3.3E-04	7.8E-01
Wenonah-Mt. Laurel Groundwater Ingestion	NQ	1.1E-01	2.7E-01
Total Risk*	3.3E-04	3.1E-04	1.8E+01

PRESENT USE: CENTRAL TENDENCY RISK**

Pathway	Carcinogenic Adult	Noncarcinogenic Adult	Noncarcinogenic Child
Site Soils Fugitive Dust Inhalation	4.6E-07	NQ	NQ
Lagoon Sediment Volatiles Inhalation	IN	IN	IN
Navesink Marl Volatiles Inhalation			
Shower Inhalation	5.6E-07	6.3E-03	2.9E-02
Whole House Inhalation	3.8E-07	NQ	NQ
Navesink Marl Groundwater Ingestion	4.5E-05	3.3E-01	7.8E-01
Wenonah-Mt. Laurel Groundwater Ingestion	NQ	1.1E-01	2.7E-01
Total Risk*	4.6E-05	3.4E-01	8.1E-01

FUTURE USE: CENTRAL TENDENCY RISK**

Pathway	Carcinogen Adult	Noncarcinogenic Adult	Noncarcinogenic Child
Site Soils Fugitive Dust Inhalation	4.6E-07	NQ	NQ
Site Soils Ingestion	6.7E-07	3.9E-02	3.6E-01
Lagoon Sediment Volatiles Inhalation	NQ	NQ	NQ
Lagoon Sediment Ingestion	NQ	3.1E-01	1.5E+00
Navesink Marl Volatiles Inhalation			
Shower Inhalation	5.6E-07	6.3E-03	2.9E-02
Whole House Inhalation	3.8E-07	NQ	NQ
Navesink Marl Groundwater Ingestion	4.5E-05	3.3E-01	7.8E-01
Wenonah Mt. Laurel Groundwater Ingestion	NQ	1.1E-01	2.7E-01
Total Risk*	4.7E-05	6.9E-01	2.6E+00

Notes:

NQ = Not Quantifiable
IN = Inappropriate
* Total Risk calculated assuming use of the Navesink Marl groundwater.
** No central tendency risk calculated for exposures which do not show high end risk. High end risk for these exposures is included in the central tendency risk quantification.

Table 27
KAUFFMAN & MINTEER SITE
SUMMARY OF RISKS
TRESPASSER EXPOSURE

PRESENT USE: HIGH END RISK

Pathway	Carcinogenic	Noncarcinogenic
Site Soils and Lagoon Sediment Ingestion	1.5E-07	5.4E-02
Ditch, Marsh, and Intermittent Stream Sediment Ingestion	3.3E-07	1.3E-02
Site Soils Fugitive Dust Inhalation	4.6E-07	NQ
Lagoon Sediment Volatiles Inhalation	IN	IN
Navesink Marl Volatiles Inhalation		
Shower Inhalation	2.7E-06	6.3E-03
Whole House Inhalation	1.3E-06	NQ
Navesink Marl Groundwater Ingestion	3.2E-04	3.3E-01
Wenonah-Mt. Laurel Groundwater Ingestion	NQ	1.1E-01
Total Risk*	3.2E-04	4.1E-01

PRESENT USE: CENTRAL TENDENCY RISK**

Pathway	Carcinogenic	Noncarcinogenic
Site Soils and Lagoon Sediment Ingestion	1.5E-07	5.4E-02
Ditch, Marsh, and Intermittent Stream Sediment Ingestion	3.3E-07	1.3E-02
Site Soils Fugitive Dust Inhalation	4.6E-07	NQ
Lagoon Sediment Volatiles Inhalation	IN	IN
Navesink Marl Volatiles Inhalation		
Shower Inhalation	5.6E-07	6.3E-03
Whole House Inhalation	3.8E-07	NQ
Navesink Marl Groundwater Ingestion	4.5E-05	3.3E-01
Wenonah-Mt. Laurel Groundwater Ingestion	NQ	1.1E-01
Total Risk*	4.7E-05	4.1E-01

Notes:
NQ = Not Quantifiable

IN = Inappropriate

* Total Risk calculated assuming use of the Navesink Marl groundwater.

** No central tendency risk calculated for exposures which do not show high end risk. High end risk for these exposures is included in the central tendency risk quantification.

Table 28
KAUFFMAN & MINTEER SITE
SUMMARY OF RISKS
SITE WORKER EXPOSURE

PRESENT AND FUTURE USE: HIGH END RISK

Pathway	Carcinogenic	Noncarcinogenic
Site Soils Fugitive Dust Inhalation	1.8E-06	NQ
Site Soils Ingestion	1.3E-06	1.4E-02
Lagoon Sediment Volatiles Inhalation	NQ	1.3E+00
Lagoon Sediment Ingestion	NQ	2.7E-01
Navesink Marl Groundwater Ingestion	1.9E-04	2.4E-01
Wenonah-Mt. Laurel Groundwater Ingestion	NQ	8.0E-02
Total Risk*	1.9E-04	1.8E+00

PRESENT AND FUTURE USE: CENTRAL TENDENCY RISK**

Pathway	Carcinogenic	Noncarcinogenic
Site Soils Fugitive Dust Inhalation	4.5E-07	NQ
Site Soils Ingestion	2.6E-07	1.4E-02
Lagoon Sediment Volatiles Inhalation	NQ	NQ
Lagoon Sediment Ingestion	NQ	2.7E-01
Navesink Marl Groundwater Ingestion	3.6E-05	2.4E-01
Wenonah-Mt. Laurel Groundwater Ingestion	NQ	8.0E-02
Total Risk*	3.6E-05	5.2E-01

Notes:

NQ = Not Quantifiable

IN = Inappropriate

* Total Risk calculated assuming use of the Navesink Marl groundwater.

** No central tendency risk calculated for exposures which do not show high end risk. High end risk for these exposures is included in the central tendency risk quantification.

Table 29
KAUFFMAN & MINTEER SITE
SUMMARY OF RISKS
CONSTRUCTION WORKER EXPOSURE

FUTURE USE: HIGH END RISK

Pathway	Carcinogenic	Noncarcinogenic
Subsurface Site Soils Fugitive Dust Inhalation	9.5E-09	NQ
Subsurface Site Soils Ingestion	NQ	1.9E-02
Lagoon Sediment Volatiles Inhalation	NQ	6.5E-01
Lagoon Sediment Ingestion	NQ	1.3E-01
Navesink Marl Groundwater Ingestion	3.8E-06	1.2E-01
Wenonah-Mt. Laurel Groundwater Ingestion	NQ	4.0E-02
Total Risk*	3.8E-06	9.2E-01

FUTURE USE: CENTRAL TENDENCY RISK**

Pathway	Carcinogenic	Noncarcinogenic
Subsurface Site Soils Fugitive Dust Inhalation	9.5E-09	NQ
Subsurface Site Soils Ingestion	NQ	1.9E-02
Lagoon Sediment Volatiles Inhalation	NQ	6.5E-01
Lagoon Sediment Ingestion	NQ	1.3E-01
Navesink Marl Groundwater Ingestion	1.8E-06	1.2E-01
Wenonah-Mt. Laurel Groundwater Ingestion	NQ	4.0E-02
Total Risk*	1.8E-06	9.2E-01

Notes:

NQ = Not Quantifiable

IN = Inappropriate

* Total Risk calculated assuming use of the Navesink Marl groundwater.

** No central tendency risk calculated for exposures which do not show high end risk. High end risk for these exposures is included in the central tendency risk quantification.

Table 30
Lagoon Sediments

Contaminant-specific ARARs:

- -- RCRA Identification of Hazardous Waste (40 CFR 261). Provides regulations concerning identification and classification of RCRA Hazardous Waste.

- -- RCRA Land Disposal Restrictions (LDRs) (40 CFR 268). Limits land disposal options and provides treatment standards for contaminants prior to disposal.

- -- New Jersey Regulations for the Identification of Hazardous Waste (NJAC 7:26-8). Provides regulations concerning the identification and classification of Hazardous Waste

Location Specific ARARs:

- -- Clean Water Act (CWA section 404(b)(1), Executive Order 11990. Provides for protection of wetlands.

- -- New Jersey Wetlands Act (NJSA 13:9A). Provides for protection of wetlands.

- -- New Jersey Freshwater Wetlands Protection Regulations (NJAC 7:7A). Provides for protection of wetlands.

Action-specific ARARs:

- -- Clean Air Act (40 CFR 61). Provides emission standards for hazardous air pollutants.

- -- New Jersey Air Emission Standards for Volatile Organic Compounds (VOCs) (NJAC 7:27-16). Provides emission standards for VOC air pollutants.

- -- New Jersey Air Emission Standards for Toxic Organic Compounds (NJAC 7:27-17). Provides emission standards for hazardous air pollutants.

- -- RCRA (40 CFR 260-268). Provides provisions relating to the definition, treatment, storage, transportation and disposal of solid and hazardous wastes.

- -- DOT rules for Hazardous Materials Transport (49 CFR 171). Provides requirements for the transportation of hazardous waste.

- -- OSHA - General Industry Standards (29 CFR 1910). Provides standards to regulate exposure of workers at hazardous waste operations.

- -- OSHA - Safety and Health Standards (29 CFR 1926). Provides regulations regarding the type of safety equipment and procedures to be followed during site remediation.

Shallow Groundwater

Contaminant-specific ARARs:

- Federal Safe Drinking Water Act (SDWA)(P.L. 93-523)

- New Jersey Safe Drinking Water Act.

- New Jersey Groundwater Quality Standards. Provides quality standards for groundwater based on aquifer characteristics and use.

Location-specific ARARs:

- No location-specific ARARs were identified for the shallow groundwater.

Action-Specific ARARs:

- RCRA Groundwater Monitoring Requirements (40 CFR 264 Subpart F). This regulation details requirements for groundwater monitoring programs.

APPENDIX III

KAUFFMAN & MINTEER SITE
ADMINISTRATIVE RECORD FILE
INDEX OF DOCUMENTS

3.0 REMEDIAL INVESTIGATION

3.4 Remedial Investigation Reports

P. 300001- 300196 Report: Final Remedial Investigation Report for Kauffman & Minteer Site, Jobstown. New Jersey, Volume I. prepared for U.S. EPA, Region II, prepared by TAMS Consultants, Inc., July 1995.

P. 300197- 300321 Report: Final Remedial Investigation Report for- Kauffman & Minteer Site, Jobstown, New Jersey, Volume II, prepared for U.S. EPA, Region II, prepared by TAMS Consultants, Inc., July 1995.

P. 300322- 300851 Report: Final Remedial Investigation Report for Kauffman & Minteer Site, Jobstown. New Jersey, Volume III, prepared for U.S. EPA, Region II, prepared by TAMS Consultants, Inc., July 1995.

4.0 FEASIBILITY STUDY

4.3 Feasibility Study Reports

P. 400001- 400095 Report: Feasibility Study for the Kauffman & Minteer Superfund Site, Jobstown. Burlington County, New Jersey, July 1996.

APPENDIX IV

<IMG SCR 0296278G>

SEP 27, 1996

Ms. Jeanne M. Fox
Regional Administrator
USEPA - Region II
290 Broadway - Flour 19
New York, NY 10007-1866

Subject: Kauffman & Minteer Superfund Site
Record of Decision (ROD)

Dear Ms. Fox:

The Department of Environmental Protection has evaluated and concurs with the following specific components of the selected remedy for the Kauffman & Minteer Superfund site as stated below:

This is the first and only planned operable wait for the Kauffman & Minteer Site. It addresses contaminated lagoon sediments at the Site and the shallow groundwater.

The major components of the selected remedy that NJDEP concurs with includes the following:

! Excavation, off-site treatment as necessary, and off-site disposal of approximately 1000 cubic yards of lagoon sediments:

! Long-term monitoring of the contaminated shallow groundwater underlying the Site. It is anticipated that the groundwater monitoring will be conducted annually for at least five years. The frequency and need to continue monitoring will be reevaluated after this five year period; and

! Institutional controls to limit groundwater use in the Navesink Formation. (NJDEP will establish a Classification Exception Area which will restrict the use of the Navesink groundwater in the vicinity of' the Site).

The DEP is requiring that EPA recognize that NJDEP's Soil Clean-up criteria differs from EPA's Remedial Action Objectives included in the ROD. However, DFP feels that the selected remedy will still achieve NJDEP's soil clean-tip guidelines.

The State of New Jersey appreciates the opportunity to participate in the decision making process and looks forward to future cooperation with the USEPA.

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APPENDIX V

FINAL RESPONSIVENESS SUMMARY
KAUFFMAN & MINTEER SUPERFUND SITE
BURLINGTON COUNTY, NJ

SEPTEMBER 1996

FINAL RESPONSIVENESS SUMMARY
KAUFFMAN & MINTEER SUPERFUND SITE
BURLINGTON COUNTY, NJ

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1. INTRODUCTION

On July 23, 1996, the US Environmental Protection Agency (EPA) held a public meeting at 7:00 PM at the Springfield Township Municipal Hall on Jacksonville-Jobstown Road in Jobstown, NJ, to describe the alternatives considered for cleanup of the Kauffman-Minteer Superfund Site (Site), and to discuss EPA's Proposed Plan (Appendix A) for remediation of the Site. The public meeting was announced in The Trentonian and in The Burlington County Times (Appendix B) and a stenographic record was made of the proceedings.

Representing EPA at the public meeting were Charles Tenerella, Section Chief, Paolo Pascetta, Remedial Project Manager; Janet Feldstein, Section Chief; Melissa Girard, Remedial Project Manager; and Ann Rychlenski, Community Relations Coordinator. Representing TAMS Consultants, Inc., contractor to EPA for the Kauffman & Minteer Superfund Site, were R. Bruce Fidler, Project Manager; Pamela Pierce, Project Engineer, and Karen Coghlan, Community Relations Specialist. Also present was Mary Lou Parra, a representative from the New Jersey Department of Environmental Protection (NJDEP).

A public comment period opened on July 9, 1996 and ended on August 7, 1996, during which time the public was invited to write to EPA with any comments not made at the public meeting. EPA received no additional written comments during the public comment period.

This Final Responsiveness Summary provides a summary of citizens' comments and concerns taken during the meeting on July 23, 1996, and EPA's responses to those comments and concerns. Section 3 contains a synopsis of those comments and responses.

The community generally supported EPA's preferred remedy, however, some meeting attendees had questions regarding the Site.

2. COMMUNITY INVOLVEMENT BACKGROUND

For over twenty years, concerns about odor, possible contamination of the local water supply, and potential contamination of the nearby environment have been centered on the Kauffman & Minteer Site. In 1991, according to the Burlington County Health Department's Pollution Coordinator, the county was receiving three to four calls per year about possible surface water contamination suspected to have originated at the Site.

EPA conducted two sets of community interviews, first in September 1989 and then again in February 1990. The major area of concern during the first set of interviews was the potential contamination of domestic wells in the area. Surface water contamination from the Site's wastewater lagoon was another concern. Most people interviewed indicated that sampling of their wells would be welcome. Several people expressed surprise that the Site had been deemed serious enough to be placed on the Superfund National Priorities List (NPL).

The second set of interviews resulted from a call placed to EPA indicating that others in the area desired to have input. Those interviews resulted in expression of concerns surrounding the severe chemical odor emanating from the Site; concern about direct exposure to lagoon waste; apparent impact on fish and wildlife; and alarm over observable physical anomalies such as the greenish, "soapy" cast of creek water at several areas near the Site.

EPA prepared a Community Relations Plan in May 1991 and established an information repository for the Administrative Record at the Springfield Township Municipal Hall. As part of the community relations activities specified in the plan, Ann Rychlenski, EPA Region 2 Public Affairs Specialist, was named Community Relations Coordinator for the Site. A mailing list of local, state, and federal officials and other interested parties, including the local media, was developed.

In June 1991, EPA held two public availability sessions in Jobstown to explain the Community Relations Plan and to present its plan to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the Site. The RI/FS has been completed and EPA held the public meeting to explain its Proposed Plan for remediating the Site on July 23, 1996. The public comment period ended on August 7, 1996, with no comments received other than those taken at that meeting, summarized herein.

3. SUMMARY OF MAJOR QUESTIONS, COMMENTS, CONCERNS, AND RESPONSES

3.1 Contamination/Potential Contamination of Area Wells and Property

Comment: A resident who lives adjacent to the Site, in the vicinity of two monitoring wells asked if one were shallow and one deep, and if any contaminants had been found in them.

EPA Response: EPA explained that the particular wells the resident referred to included a cluster of both a shallow and deep well. EPA stated that there was no significant contamination detected in these wells, meaning that there were no contaminants detected above risk-based concentrations.

Comment: An interested citizen referred to a reported presence of the contaminant trichlorethylene in the well water of a nearby resident, based on 1984 tests of the water, and suggested that the resident had not been informed of the test results.

EPA Response: EPA explained that the residential well sampling was conducted by the New Jersey Department of Environmental Protection (NJDEP) during the 1980s, and that EPA also conducted additional well sampling in 1990 and 1993. The typical procedure for any agency doing testing is to obtain permission from residents to test their water prior to doing any sampling, and to provide the resident with the sampling results as soon as they are available. EPA and NJDEP have been unable to locate a 1984 letter to the particular resident referred to, but notes that this resident's well was sampled by EPA in 1990, at which time the results were transmitted to the resident. No contaminants were detected in the well above drinking water standards.

Comment: The same speaker indicated that in 1988 the records showed phthalates in five residential wells. Although the records do not state whether or not the phthalates exceed MCLs, the speaker expressed concern. She also wanted to know if the residents had been notified.

EPA Response: EPA explained that it was the concern over potential for contamination in area wells in the which contributed to the Site being listed on the NPL, and the need for EPA to perform a Remedial Investigation. When EPA tested the five wells in question, among others, no evidence of phthalates was found, or any other contaminants, above drinking water standards. Regarding notification of residents, EPA reiterated that the normal protocol for EPA, NJDEP, and the New Jersey Department of Health (NJDOH) is to notify everyone whose wells are tested of the results.

Comment: A resident living adjacent to the Site asked if what was now running onto her property from the lagoon was rainwater.

EPA Response: EPA explained that, as part of Removal Actions EPA has performed at the Site, the Agency has tested the water which collects in the lagoon and sometimes overflows. Results indicated that it is not hazardous; it is rainwater.

Comment: Another resident adjacent to the Site asked if she could have her well water retested.

EPA Response: EPA agreed to arrange for testing of this resident's well. At the resident' request, EPA sampled the well on September 10, 1996. The results will be transmitted to the resident as soon as they are available.

Comment: A resident asked if the area around the underground storage tanks (USTs) on the property had been tested for contamination.

EPA Response: EPA confirmed that the soil around the tanks was checked for contamination, and that no significant contamination was detected.

Comment: A resident asked if the water in the school close to the K&M Site had been tested, and if not, whether it could be tested.

EPA Response: EPA stated that the school's water had been tested by EPA in the early 1990s, and that no contamination was detected above drinking water standards.

Comment: A speaker asked how EPA could be sure the Navesink aquifer had not contaminated the underlying Wenonah aquifer. He also reiterated his concern, on behalf of an adjacent resident, that EPA should retest her well, to ensure that this resident was not unknowingly drinking contaminated water.

EPA Response: EPA explained that the Navesink aquifer has a very low transmissivity, and therefore that ground water moves very slowly through this hydraulic unit, and does not tend to migrate downward to underlying aquifers. Based on the results of the Remedial Investigation, contamination was limited to the shallow aquifer; no contamination was found in the underlying Wenonah-Mt. Laurel aquifer above drinking water standards. In addition, EPA has sampled residential wells in the vicinity of the Site, which draw from the Wenonah-Mt. Laurel aquifer, and no contamination was detected above drinking water standards. With respect to this particular resident, EPA noted that the groundwater flow direction is away from the resident's property, so contamination from the Site would be unlikely. EPA also pointed out that long term monitoring will be conducted as part of the remedy, to ensure that wells in the vicinity of the Site are not impacted. However, as stated above, EPA did agree to sample this resident's well again (it had been sampled in the early 1990s). This sampling was conducted on September 10, 1996.

Comment: A resident asked if the ground water would be tested every year.

EPA Response: EPA explained that the on-site groundwater monitoring wells will be tested periodically as part of the groundwater monitoring program at the Site. Initially, the testing will be annually. Over time, depending on the results, the frequency may be reduced. It is expected that, after removal of the lagoon sediments, which represent the source of groundwater contamination, contaminant levels will decrease.

Comment: A speaker requested that EPA provide a list of chemicals that would be of concern at the Site to the Township, for the convenience of people who wanted to have their wells tested.

EPA Response: EPA referred the speaker to Table 4-2 in the Remedial Investigation Report that provides the Federal Safe Drinking Water Act Maximum Contaminant Levels and NJ Class II-A Groundwater Standards (i.e., evaluation criteria) for the organic contaminants and trace metals detected in groundwater.

3.2 Requests for Clarification

Comment: An interested citizen requested several clarifications. She asked whether: 1) a Subtitle D Disposal Facility is a municipal landfill; 2) where off-site treatment of the sediment would occur; and 3) if the material being removed were a liquid, whether it would be treated at a local sewer plant.

EPA Response: EPA clarified that 1) a Subtitle D landfill, also known as a municipal landfill, is suitable for disposal of non-hazardous wastes; 2) off-site treatment of the lagoon sediment, if necessary prior to disposal, would occur at a Resource Conservation and Recovery (RCRA) Subtitle C facility for hazardous waste; and 3) if the liquid were nonhazardous under RCRA, treatment at a local sewer plant would be possible.

Comment: The same speaker inquired if EPA had investigated the number of wells in the Navesink aquifer. The speaker referred to older homes in the area which may have unregistered wells at depths of ten to 28 feet. Further, she referred to one of the project reports that stated some residents may have placed wells into the shallow Navesink.

EPA Response: EPA explained that a well survey went to all residents in the area, and a well search was conducted of permitted wells via NJDEP records. There are apparently two unregistered wells in the Navesink (shallow) aquifer, neither of which are used for drinking water. It is possible that some residents may have installed wells into the Navesink aquifer, but it is unlikely that anyone would drink the water due to the naturally-occurring high sediment levels, which would make the water objectionable for drinking water. When accessible drinking water is available in the Wenonah-Mt. Laurel Aquifer (beneath the Navesink), there would be no need for installation of a well in the shallow formation.

Comment: The same speaker suggested that monitoring wells are a "hit-and-miss" system of monitoring, because of the number of variables in the movement of groundwater and contamination.

EPA Response: Consideration of such variables was an integral and time-consuming part of EPA's investigation of the Site. EPA explained that its monitoring program was initiated to ensure that the upper shallower aquifer was not contaminating the lower drinking water aquifer. Further, EPA explained that the science of hydrogeology, while not perfect, provides a rational means for assessing the potential for migration of contamination. Knowledge of site history, topography, regional hydrology, and local conditions is used to design a network of monitoring wells that can be used to determine the direction of groundwater flow, the potential for water movement between geologic formations, the distribution of contaminants, and to estimate the rate of groundwater flow. With these data, and knowledge of the characteristics of different types of contaminants, the likely movement and behavior of those contaminants in the groundwater system can be predicted. Furthermore, EPA's monitoring program will be used to ensure that contaminant levels in the Navesink decrease over time, and do not contaminate the lower aquifer.

3.4 Implementation of the Remedy

Comment: A resident adjacent to Site asked if, when the lagoon cleanup is implemented, EPA would just clean out what is in the bottom, and if so, what would be done with the hole.

EPA Response: EPA explained that it will remove contaminated sediments from the bottom of the lagoon, then backfill the hole and revegetate the area.

Comment: The same resident asked if EPA were finished with cleanup of the property behind the lagoon and, referring to recent digging in that area, asked if the dumpsters that had been behind the lagoon had been removed.

EPA Response: EPA stated that final cleanup of the area adjacent to the lagoon will be included along with the lagoon sediment remediation. EPA explained that the activity the resident referred to was part of the latest Removal Action to address material which had been left in tanker trucks at the Site. The contents had been placed into dumpsters prior to disposal. This action, which addressed all remaining stored wastes at the Site, was completed in the Summer of 1995.

Comment: A resident living adjacent to the lagoon inquired about a patch of her property on which nothing would grow, and stated that the area floods from the lagoon when it rains. She identified it on the site map and wanted to know if EPA was going to clean it up as part of the proposed action.

EPA Response: EPA confirmed that the property indicated is the stressed area of the marsh adjacent to the lagoon. EPA explained that this area is included as part of the lagoon sediment remediation.

Comment: Several residents wanted to know when the entire remediation would be completed. One resident referred to unsuccessful attempts by herself and others to sell their properties, and expressed concern about hearing references to additional five-year time frames.

EPA Response: EPA explained that within six months of initiating the remediation, the project could be complete. However, at this time, due to budget limitations, these remediation projects are being prioritized nationally for funding. At this time, prioritization is based on risk, and because the risks are not high at K&M, funding for this action may not be available immediately. EPA agreed to keep local officials informed as to the status of the planned remediation.

Regarding the question concerning the reference to "five years," EPA clarified that the five-year review mentioned earlier in the evening's discussion referred to EPA's conducting periodic evaluations to ensure that the remediated Site is stable. EPA pointed out that in addition to the review in five years, the agency is conducting a groundwater monitoring program for this Site.

Comment: A resident asked specifically whom she should write to if the Site was not remediated in the next year and one half.

EPA Response: EPA explained that residents are free to write to EPA or their elected representatives. The current EPA Project Manager for this Site is Paolo Pascetta, who can be reached at (212) 637-4383.

3.5 Miscellaneous

Comment: An interested citizen questioned EPA's determination that the "only subpopulation identified that may be at increased risk are the children living in the vicinity of the site."

EPA Response: EPA explained that, as part of the Baseline Risk Assessment, the Agency tries to determine if there is any particularly sensitive subpopulation which might be potentially at risk from the Site, in order to conservatively evaluate risks. In this case, EPA explained that children were the most sensitive receptors identified as being potentially at risk, and therefore, EPA evaluated the risks to children specifically. Based on the results of the risk assessment, under the hypothetical scenario of children ingesting or inhaling lagoon sediments, it was determined that an unacceptable risk would be present.

Comment: The Mayor stated for the record that he agreed with EPA's preferred remedy. He will recommend to the Town Council that it also approves the preferred remedy, and that the town indicate its support to the appropriate federal representatives.

EPA Response: EPA stated that it appreciated the comment.

Comment: A resident for information regarding underground storage tanks (USTs) on the Site, whether or not they would ever be removed, and about potential future liability of property owners for contamination from the USTs.

EPA Response: EPA explained that the contents of the tanks included petroleum products, such as fuel for the trucks, waste oil from the trucks, and plasticizer heels from the loads the trucks used to carry. During EPA's 1995 removal action, the Agency was able to address two of the USTs by removing the contents, which contained hazardous substances under Superfund. However, the other tanks contained pure petroleum products, which can not be addressed under the Superfund program. These tanks have been referred to NJDEP for further action under State law.

For petroleum products, a future owner would not be liable under Superfund because of the petroleum exclusion, but could potentially be liable under the State's underground storage tank program.

Comment: With regard to the discussion on the direction of groundwater flow in the Navesink Formation and Wenonah-Mt. Laurel Aquifer, an interested citizen asked if the flow of water can reverse itself under certain conditions.

EPA Response: EPA explained that if there is a very large local well drawing water, it can sometimes influence groundwater flow in the area of the well, which would draw water toward the well. EPA has not identified any such incidences in this case. Based on data collected during EPA's Remedial Investigation, groundwater flow at the Site is governed by regional hydrogeology.

Comment: A resident wanted to know who currently owns the property.

EPA Response. EPA explained that the Site is currently owned by the Kauffman family. The Mayor added that the Township currently has a lien on the property.

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PURPOSE OF PROPOSED PLAN

This Proposed Plan describes the remedial alternatives considered for the Kauffman and Minteer (K&M) Superfund site, and identifies the preferred remedial alternative with the rationale for this preference. The Proposed Plan was developed by the U.S. Environmental Protection Agency (EPA), as lead agency, with support from the New Jersey Department of Environmental Protection (NJDEP). The EPA is issuing the Proposed Plan as part of its public participation responsibilities under Section 7(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Section 300.430(f) of the National Contingency Plan (NCP). The alternatives summarized here are described in the feasibility study (FS) report, which should be consulted for a more detailed description of all the alternatives.

This Proposed Plan is being provided as a supplement to the Remedial Investigation (RI) and FS reports, to inform the public of EPA's and NJDEP's preferred remedy, and to solicit public comments pertaining to all the remedial alternatives evaluated, as well as the preferred alternative.

The remedy described in this Proposed Plan is the preferred remedy for the site. Changes to the preferred remedy, or a change from the preferred remedy to another remedy, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedy will be made after EPA has taken all public comments into consideration. We are soliciting public comment on all of the alternatives considered in the detailed analysis of the FS because EPA and NJDEP may select a remedy other than the preferred remedy described herein.

COMMUNITY ROLE IN SELECTION PROCESS

EPA and NJDEP rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the RI and FS reports, Proposed Plan, and supporting documentation have been made available to the public for a public comment period which begins on July 9, 1996, and concludes on August 7, 1996.

A public meeting will be held during the public comment period at the Springfield Township Municipal Hall on Jacksonville-Jobstown Road, Jobstown, NJ, on July 23 at 7:00 pm to present the conclusions of the RI and FS, to elaborate further on the reasons for recommending the preferred remedial alternative and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document which formalizes the selection of the remedy.

All written comments should be addressed to:

Ms. Melissa Girard, Remedial Project Manager
U.S. Environmental Protection Agency
New Jersey Superfund Branch I
290 Broadway, 19th Floor
New York, New York 10007-1866

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Copies of the RI and FS reports, Proposed Plan, and supporting documentation are available at the following repositories:

U.S. EPA
290 Broadway
Floor 19,
New York. NY 10007-1866
(212) 637-4369

Springfield Township
Municipal Building
Jacksonville-Jobstown Rd.

(609)723-2464

SITE BACKGROUND

Kauffman & Minteer, Inc. operated a bulk liquid transportation facility located on the eastern corner of the intersection of Monmouth Road (Route 537) and Jobstown-Juliustown Road in Jobstown, Springfield Township, Burlington County, New Jersey. Geographically, the site is located at latitude 40 02' 10.8" N and longitude 74 41' 37.5" W (USGS, 1957). Figure 1 shows the general layout and location of the site.

The K&M property occupies approximately 5.5 acres in sparsely populated, predominately rural area that primarily supports agriculture, horse farming, and related businesses. The K&M property is bordered on the north by residences and Route 537, on the northeast and east by a marsh area, on the south by an overgrown and wooded area traversed by Barker's Brook, and on' the west by Jobstown-Juliustown Road.

A small marsh adjacent to the eastern property boundary gives rise to an intermittent stream. This stream flows south-southeast into a branch of Barker's Brook which is located approximately 575 feet south of the K&M property.

The site area is not served by either sanitary or storm sewer systems. The K&M facility, like surrounding residences and businesses, has a septic system to handle sanitary wastes. Stormwater runoff from the site area flows to Barker's Brook via drainage ditches and overland flow. Two discharge points along the southwesten boundary of the K&M property, adjacent to Jobstown-Juliustown Road, carry runoff from the facility operations lot and parking areas to Barker's Brook via a drainage ditch.

There are four aquifers beneath the K&M site. In order of increasing depth, the aquifers are the Navesink Marl Formation, the Wenunah-Mt. Laurel, the Englishtown, and the Raritan-Magothy. The direction of groundwater flow is south-southwest. The site rests on the Navesink Formation, a glauconitic, sandy clay layer, approximately 10 to 25 feet thick in the site vicinity. The Navesink Formation is the uppermost water bearing unit found at the site. However, due to its low and inconsistent yields to wells and poor water quality, it is normally not used as a source of water. Below the site and directly below the Navesink Formation is the Wenonah-Mt. Laurel Aquifer, which is approximately 60 feet thick in the site vicinity. In the area around the site, individual domestic wells are the primary source of drinking water. Within three miles of the site, but primarily in the Juliustown area (the principal use area of the Wenonah-Mt Laurel Aquifer), approximately 560 people use water from private wells that tap the Wenonah-Mt. Laurel Aquifer. The nearest well drawing water from this aquifer is located upgradient, on the north side of the intersection of Routes 670 and 537, approximately 500 feet from the K&M site.

Kauffman & Minteer, Inc. transported, in company owned tankers, bulk liquids consisting primarily of organic substances, including plasticizers, resins, vegetable oils, soaps, petroleum oils, and alcohols. From 1960 through at least 1981, wastewater generated from the washing of tanker interiors was discharged to an on-site, 0.7-acre, irregularly shaped lagoon, about three to ten feet deep. The lagoon is unlined and has inadequate runoff and runon control structures. It has no overflow diversion structure to protect the system from overflow during rainfall events: there is only a low earthen berm to protect the adjacent marsh from overflow. An additional berm was installed in 1991 to divert parking area runoff away from the lagoon. A spray aeration system consisting of seven sprinklers located along the western side of the lagoon was formerly used to evaporate wastewater by spraying it over the lagoon. Spray from this system was sometimes carried by the wind onto surrounding properties. The spray aeration system was dismantled prior to construction of the diversion berm.

Sampling was conducted at the site on at least nine occasions by EPA and NJDEP between August 1981 and January 1988. Media sampled included waste sources, groundwater (on-site wells and residential wells), surface water, soils, and sediment. Three groundwater monitoring wells were installed immediately adjacent to the lagoon in 1981 by NJDEP to determine if contamination from the lagoon was migrating to the groundwater.

A site investigation was conducted in 1985, which determined that the site's eligibility for inclusion on the National Priorities List (NPL). The K&M facility was subsequently placed on the NPL on March 30, 1989.

A removal action was conducted by EPA from the summer through the fall of 1991 which included the collection and disposal of the liquid within the lagoon and fencing around the lagoon. Since that time, the lagoon has refilled due to precipitation. In the summer of 1995, a release of liquid contaminated with plasticizers from an on-site tank trailer prompted a second removal action. This subsequent removal action consisted of the collection and disposal of the contaminated material found in four on-site tank trailers and deteriorating drums that were left on the site as a result of K&M's closure. The empty tank trailers were then demolished and disposed of. Shortly before EPA initiated this removal action, an assessment of the contents of ten underground storage tanks (UST) b NJDEP resulted in the identification of two USTs containing. hazardous substances. Consequent to NJDEP's identification of these materials, the contents of the USTs were incorporated into the 1995 removal action. Although other additional underground storage tanks may contain minute amounts of fuel oil products and are therefore precluded from any CERCLA action, NJDEP further investigate these tanks to determine if any further remedial measures are warranted.

REMEDIAL INVESTIGATION SUMMARY

A remedial investigation of the K&M site was performed in 1991 by TAMS Consultants, Inc. TAMS). The firm of Fanning, Phillips & Molnar (Ronkonkoma, New York) assisted TAMS as a subcontractor, providing boring and monitoring well inspection, hydrogeologic testing, and evaluation of geologic and hydrogeologic information. RI field work was initiated at the site in September 1991, during which time six monitoring wells, in addition to the three installed by NJDEP in 1981, were installed. Initially, the facility remained in business; however, the frequency of activity substantially decreased beginning in late 1991 and facility operations were discontinued soon afterward.

The purposes of the investigation were to determine the physical characteristics of the site and sources of contamination, to evaluate the nature and extent of contamination, and to characterize the potential health risk and environmental impact of the site.

The following activities were conducted during the RI: a land survey, cultural resources survey, geophysical survey, soil gas survey, population/land-use survey, lagoon sediment investigation, surface water and sediment investigations, a geologic investigation, surface and subsurface soil investigations, a groundwater investigation, and an ecological investigation. These surveys and investigations were used to delineate the nature and extent of contamination as a result of K&M's activities at the site.

Volatile organic compounds (VOCs) and semi-volatile organic compounds (SVOCs) were the primary contaminants detected at the site. The RI identified contaminants in the lagoon sediments and in the shallow groundwater; the lagoon sediments being the source of contamination in the shallow aquifer.

The predominant sediment contaminants and maximum concentrations detected, in parts per million (ppm), are: tetrachloroethylene (230), trichloroethylene (3,100), 1,1,1 trichloroethane (1,600), 1,2-dichloroethylene (1,100), 1,1-dichloroethane (27), ethylbenzene (1,300), toluene (2,200), butylbenzylphthalate (31,000), di-n-octylphthalate (4,400). The sediments that exceed health-based screening levels are within the area of the lagoon. The volume of sediments that exceed health-based levels is approximately 1000 cubic yards.

The predominant Navesink Formation (shallow) groundwater contaminants and the maximum concentrations detected, as compared to their respective Federal Maximum Contaminant Levels (MCLs) denoted in parentheses, or as not available (NA), in parts per billion (ppb), are: VOCs -- tetrachloroethylene: 4/(5), trichloroethylene: 16/(5), 1,2-dichloroethylene: 94 /(10), 1,1-dichloroethane: 4 /(NA), benzene: 1/(5), isophorone: 570/(NA), and vinyl chloride: 17/(2): Inorganics -- beryllium 3/(4), chromium: 22.7/(100), and vanadium: 56. 1 /(NA). The only potential contaminant of concern found in Laurel (middle) Aquifer was chromium at a maximum concentration of 20.4 ppb (MCL is 100 ppb). Those compounds in the groundwater that exceed Federal and/or State drinking water standards are contained within the property boundaries. The estimated dimensions of the contaminated groundwater plume are: 200 feet wide by 200 feet long by 10 feet deep. Based on the available data, it is believed that the plume remains on site: however, further delineation of the contaminated groundwater plume will occur in design.

SUMMARY OF SITE RISK

Based upon the results of the RI, a baseline risk assessment was conducted to estimate the risks associated with current and future site conditions. The baseline risk assessment estimates the human health and ecological risk which could result from the contamination at the site if no remedial action were taken.

Human Health Risk Assessment

A four-step process is utilized for assessing site-related human health risks for a reasonable maximum exposure scenario: Exposure Assessment--estimates the magnitude of actual and/or potential human exposures, the frequency and duration of these exposures, and the pathways (e.g., ingesting contaminated well-water) by which humans are potentially exposed. Hazard Identification- -contaminants of concern at the site are identified based on several factors such as toxicity, frequency of occurrence, and concentration. Toxicity Assessment--determines the types of adverse health effects associated with chemical exposures, and the relationship between magnitude of exposure (dose) and severity of adverse effects (response). Risk Characterization--summarizes and combines outputs of the exposure and toxicity assessments to provide a quantitative (e.g., one- in-one -million excess cancer risk) assessment of site-related risks. The-reasonable maximum exposure was evaluated.

EPA uses two toxicity factors, reference doses (RfDs) and slope factors to calculate the respective noncarcinogenic and carcinogenic risk attributable to particular contaminants. An RfD is an estimate of a daily exposure level that is not likely to result in any appreciable risk of deleterious effects during a person's lifetime. A slope factor establishes the relationship between the dose of a chemical and the response, and is commonly expressed as a probability of a response per unit intake of a chemical over a lifetime. Section 6.1 of the RI contains a full summary of the contaminants of concern (COCs), their toxicological parameters and their potential human health effects.

Although EPA has established RfDs and slope factors for many chemicals, there are others that currently do not have such accepted toxicological parameters available. Consequently, the risk due to such contaminants cannot be quantified, but can be qualitatively evaluated. Lead, which does not have an RfD or slope factor, was also qualitatively evaluated. A recent EPA directive has recommended a health-based screening level for lead in soil of 400 parts per million (ppm) until RfDs and slope factors are established. Since lead is present in the site soils at a maximum concentration of 385 ppm, which does not exceed the health-based screening level, it has been eliminated as a COC.

The RI data was compiled and screened according to frequency of occurrence, concentration, and toxicity, to develop COCs which would be representative of site risks. The COCs for the lagoon sediments include: 1,2-dichloroethylene, 1,1-dichloroethane, 1,1,1-trichloroethane, trichloroethylene (TCE), tetrachloroethylene (PCE), benzene, toluene, butylbenzylphthalate (BBP), and di-n-ocrylphthalate (DNOP). The COCs for the shallow groundwater include: vinyl chloride, 1,2-dichloroethylene (1,2-DCE), 1,1-dichloroethane, benzene, isophorone, TCE, PCE, beryllium, chromium, and vanadium. The only potential COC for the middle aquifer was chromium. Several of the contaminants in the groundwater and lagoon sediments are possible human carcinogens.

The data collected from the RI were grouped by media corresponding to respective exposure pathways evaluated. The key media are: surface soils (0-2 feet), subsurface soils (greater than 2 feet), lagoon sediments, drainage ditch and intermittent stream sediments, drainage ditch and intermittent stream surface waters, marsh sediments, Barkers Brook sediments, Barkers Brook surface water, Navesink Marl groundwater (shallow groundwater wells), and Wenonah-Mt. Laurel groundwater (deep groundwater wells). Of the above, the only areas characterized in the Baseline Risk Assessment as having a potential for adverse health effects were the lagoon sediments and the shallow groundwater. A detailed description of all site areas and exposure pathways is contained in Section 6 of the RI. Below is a summary of the Baseline Risk Assessment and associated exposure pathways.

Under present use conditions, trespassers and site workers were evaluated for exposure to site soils and lagoon sediments. Specifically, trespassers were evaluated for an ingestion pathway, and workers were evaluated for both inhalation and ingestion routes.

Exposures to groundwater under the present use scenario were evaluated for nearby residents, trespassers, and site workers (under a combined current/future use scenario). Trespassers and residents were evaluated for inhalation of the Navesink groundwater, and all three groups were evaluated for ingestion of the Navesink and the Wenonah-Mt. Laurel groundwater.

Residential properties surround the site as the zoning in the immediate area of the site is "Neighborhood Commercial." K&M is a non-conforming business, in that it was established prior to the zoning restrictions. Now that facility operations have been discontinued, any future activities on the premises must conform to the zoning code. Due to the present zoning restrictions, there is a distinct likelihood that the site would be used in the future for residential development. Therefore, the future use risk scenario assumes residents would be living on the site and construction workers would be present on the site as a result. Residents were evaluated for exposure to groundwater via ingestion and inhalation of the Navesink groundwater, and via ingestion of the Wenonah-Mt. Laurel drinking water aquifer Construction workers were evaluated for ingestion of both the Navesink and the Wenonah-Mt. Laurel groundwater, Similarly, both groups were evaluated under the future use scenario for ingestion and inhalation of lagoon sediments and site soils. In taking the most conservative approach, exposure via ingestion of water from the shallow groundwater (Navesink) was evaluated; however, a well search performed within a five mile radius of the site revealed that no drinking water wells were installed in the Navesink. Unlike the Wenonah-Mt. Laurel (middle aquifer), the relatively low permeability, and naturally occurring high levels of iron and manganese, significantly limit the use of the Navesink Marl Formation as a drinking water source. Additionally, sampling of nearby residential wells did not detect any, contaminants above health-based levels. Although the Navesink Formation could be a potential source of public water supply for household purposes, there are no wells registered with the NJDEP that draw from the Navesink Formation. The higher transmissivity, greater hydraulic conductivity, and better water quality of the Wenonah-Mt. Laurel Aquifer make drilling to a greater depth cost effective. A site inspection did reveal two shallow residential wells, one upgradient and one sidegradient to the site; however, the wells are not used for drinking or bathing purposes.

To assess the overall potential for carcinogenic effects to arise, EPA calculates excess cancer risk. Excess cancer risk is an, estimation of the incremental probability of an individual developing cancer over a lifetime as a result of exposure to the potential carcinogen(s). The current guideline for acceptable exposure is an excess carcinogenic risk in the range of 1 x 10 -4 to 1 X 10 -6 (one in ten thousand to one in one million).

To assess the overall potential for noncarcinogenic effects posed. EPA developed the Hazard Index (HI). This index is calculated by comparing, as a ratio, the sum of the individual chemical exposure levels over a specified time period (e.g., lifetime) with a reference dose derived for a similar exposure period. The current guideline for acceptable exposure is an HI not to exceed 1.0.

Excess lifetime cancer risks and HIs were calculated for all of the various pathways under the present and future land use scenarios in Section 6.5 of the RI. In the current use scenario, residents are estimated to have an excess cancer risk of 3.2 x 10 -4, and site workers a risk of 1.9 x 10 -4 from ingestion of the shallow groundwater, due primarily to vinyl chloride. However, no workers have been observed at the site since facility operations were discontinued. All other pathways are within the guidelines for acceptable exposure to carcinogens and noncarcinogens. In the future use scenario, ingestion of lagoon sediments by a child results in an estimated HI of 7.0, and inhalation of lagoon, sediments results in HIs of 2.0 for an adult resident and 9.4 for a child. The total non-cancer risks for the future construction worker was calculated at 1.1 which slightly exceeds the acceptable risk range for noncarcinogens. The noncarcinogenic risk was attributable to butylbenzylphthalate and di-n-ylphthalate.

Subsequent to the completion of the RI, it was found that provisional slope factors and Reference Doses for trichloroethylene and tetrachloroethylene were not considered in the analysis. The RI states that these chemicals could not be evaluated quantitatively because of the absence of a slope factor, However, provisional slope factors are now available. Consequently, calculations of the risks from these chemicals have been developed. Based on these calculations, the calculated risks for the current residents increased from 3.2 x 10 -4 to 3.3 x 10 -4 and the risks for site workers increased from 1.9 x 10 -4 to 1.93 X 10-4 . For the future risks, the risks to resident adults from lagoon sediment ingestion increased from 0.75 to 1.45 and the risks to children increased from 7.0 to 13.6.

Soil exposure pathways are all within EPA guidelines for acceptable exposure to carcinogens and noncarcinogens. The routes of exposure to noncarcinogens are all below an HI of 1.0; the greatest risk of carcinogenic exposure is at 4.2 x 10-6 for soils ingestion, which is well within the acceptable risk range of 1 x 10 -4 to 1 x 10 -6. Consequently, remedial alternatives for the soils on the site will not be addressed at this time.

The scenarios which exceeded guidelines for acceptable human exposure were as follows: residents and site workers currently taking the Navesink groundwater, although no current exposure is occurring under this scenario; and a future use scenario of adult residents and their children living on the site, ingesting or inhaling noncarcinogenic contaminants in the lagoon sediments.

Actual or threatened releases of hazardous substances from the K&M site, if not addressed by one of the active measures considered in this Proposed Plan, may present a future threat to public health.

Ecological Risk Assessment

An environmental assessment was performed to identify and estimate the actual and/or potential adverse ecological impacts of contaminants released by the K&M site. A four-step process, very similar to that used in human health assessment, was utilized. It consists of: Problem Formulation - a qualitative evaluation of contaminant release, migration, and fate; identification of contaminants of concern, receptors, exposure pathways, and known ecological effects of the contaminants; and selection of endpoints for further study. Exposure Assessment - a quantitative evaluation of contaminant release, migration and fate; characterization of exposure pathways and receptors; and measurement of estimation of exposure point concentrations. Ecological Effects Assessment - literature reviews field studies, and toxicity tests, linking contaminant concentrations to effects on ecological receptors. Risk Characterization - measurement or estimation of both current and future adverse effects. Unlike the Human Health Risk Assessment, the science of Environmental Assessment has not evolved to the point where standard risk calculations can be made. Risk Characterization is primarily the process of comparing the results of the Exposure Assessment with he results of the Known Ecological Effects assessment.

The primary objective of this assessment was to estimate the potential ecological impacts associated with the release of contaminants from the K&M facility. Based upon: 1) the baseline information gathered during the field investigation, 2) review of available data and literature, and 3) a comparison of the levels of site contamination to available toxicity data, there appear to be no contaminant-related impacts on the immediate aquatic and terrestrial ecosystems.

The study area of the K&M site has four primary ecological features or community types: open field, riparian woodlands, marsh, and stream. Appropriate media for each were analyzed- i.e., respectively, surficial soils (0-2 feet), and composite soil samples from depths greater than 2 feet, surface water and sediment from Barker's Brook, and sediment and soil from the adjacent marsh along the eastern portion of the site. The ecological risk assessment evaluated the contaminants of concern associated with each medium/community type, and with the biota (plants and animals) of each. For the open field habitats, the soil-borne contaminants list was comprised of phthalates (i,e., butylbenzylphthalate, bis(2-ethylhexyl) phthalate, and di-n-octylphthalate) and lead. The contaminants in the marsh sediments were phthalates, chromium, and lead. The Barker's Brook sediments revealed contaminants of concern - phthalates and chromium; the surface water of the brook was eliminated as a medium of environmental exposure on the basis that no contamination was detected above New Jersey Surface Water Quality Criteria (NJSWQC).

The only contaminant -related ecological impact observed was to some flora in the lagoon-fed marsh. This stressed area was an isolated section adjacent to the lagoon. Obvious signs of phytotoxicity and adverse impacts were yellow, withered vegetation, and vegetation stained black from the overflow of lagoon contents. Recent site inspections indicate that the majority of the marsh area vegetation has recovered; only the black-stained area immediately adjacent to the lagoon still exhibits contaminant-related stress to the flora ecosystem. The flora in the remainder of the study area appeared healthy and exhibited a species composition indicative of similar habitats elsewhere. There were no obvious physical abnormalities observed in the fauna of the study area either, including numerous frogs found in the stressed area of the marsh. The study area contained birds, mammals and herpetofauna species that were representative of each habitat type. Additionally, the assemblage of organisms in Barker's Brook adjacent to, upstream, and downstream of the K&M

facility were typical for the habitat type.

The potential impacts of contaminant exposure on local biota were assessed based upon a review of available criteria and the relevant literature. The primary sources for this information were: EPA Water Quality Criteria and literature compiled by the National Oceanographic and Atmospheric Administration (NOAA). Detailed information on the potential ecological effects of the COCs is contained in Section 7 of the RI. Detailed information on the ecological assessment is contained in Appendix G of the RI.

SCOPE AND ROLE OF ACTION

The two media identified in the RI as potentially requiring remedial action are the lagoon sediments and the shallow groundwater. The FS developed remedial alternatives that could remediate both of these media. Therefore, the preferred remedy in this Proposed Plan will address both the lagoon sediments and the shallow groundwater. Additionally, an area stained black from the overflow of the lagoon requires restoration because of the contaminant-stressed vegetation. In light of the fact that this area is immediately adjacent to the lagoon, remedial alternatives for this area will be evaluated along with the lagoon sediments.

REMEDIAL ACTION OBJECTIVES

Remedial action objectives are specific goals to protect human health and the environment. These objectives are based on availabie information and standards such as applicable or relevant and appropriate requirements (ARARs), and risk-based levels established in the risk assessment.

The following remedial action objectives were established:

! Prevent exposure through ingestion of contaminated lagoon and drainage ditch sediments;

! Restore an area of contaminant-stressed vegetation immediately adjacent to the lagoon;

! Prevent exposure through ingestion of on-site contaminated groundwater.

To achieve these objectives, EPA has developed site-specific, risk-based remediation goals. These remediation goals would decrease direct contact risks at the site to the 10 -6 level. EPA understands that NJDEP has developed soil cleanup guidelines designed to protect groundwater resources and has requested that the lagoon sediments be remediated consistent with its Proposed Cleanup Standards for Contaminated Sites (February 1992). Based on available information, EPA believes that its planned remedial construction project will achieve the NJDEP guidelines. Notwithstanding this belief, EPA will ensure that any residual soil contamination does not impair the designated uses of the groundwater.

SUMMARY OF REMEDIAL ALTERNATIVES

While there is currently not a complete pathway for ingestion of the lagoon sediment, this situation will likely change in the future. As mentioned above, the site is zoned Neighborhood Commercial, which would allow the property to be used for residences or light commerce. Whether the site is used for residential or light commerce, it is likely that the lagoon would be demolished which could result in the sediments being raised to the surface. With the sediments being raised to the surface there will be a complete pathway for ingestion which would then pose an unacceptable risk. In addition to the sediment posing potential unacceptable ingestion risk, it also acts as a continuous source of contamination to the upper aquifer.

CERCLA requires that each selected site remedy be protective of human health and the environment, be cost effective, comply with other statutory laws, and utilize permanent solutions and alternative treatment technologies and resource recovery alternatives to the maximum extent practicable. In addition, the statute includes a preference for the use of treatment as a principal element for the reduction of toxicity, mobility, or volume of the hazardous substances.

The FS report evaluated, in detail, four remedial alternatives address the contamination associated with the lagoon sediments, and three remedial alternatives to address the contamination associated with on-site groundwater.

These alternatives are:

LAGOON SEDIMENT ALTERNATIVES

Alternative LS-I: No Action

Estimated Capital Cost:	$0
Estimated Annual O&M Cost:	$0
Estimated 5 Year Review Cost:	$36,500
Estimated Present Worth:	$102,000
Estimated Construction Time:	None

CERCLA and the NCP require the evaluation of a No Action alternative to serve as a point of comparison with other remedial action alternatives. The No Action alternative for the lagoon sediments would allow the site to remain in its present condition. Because this alternative would result in contaminants remaining on site, CERCLA requires that the site be reviewed at least every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes. No other action is proposed under this alternative.

Alternative LS-2: Cap/Cover

Estimated Capital Cost:	$760,000
Estimated Annual O&M:	$1,000
Estimated 5 Year Review Cost:	$7,200
Estimated Present Worth:	$796,000
Estimated Construction Time:	three months

This alternative would require the dewatering of the lagoon, filling and regrading to meet the surrounding topography. and the installation of a cap or cover. Approximately 31,000 square feet of contaminated lagoon sediment area would be capped. The alternative would require deed restrictions to protect the capped area. The three options considered for this alternative are:

Option 2a:	Vegetative Cover
Option 2b:	Asphalt/Concrete Cap
Option 2c:	RCRA Cap

An asphalt cap on the lagoon has been used for costing purposes however, any of the capping. alternatives would be similar in cost because of the small surface area involved. A complete breakdown of costs for each option can he found in Appendix B of the FS. A vegetative cover would be used on the area of contaminant-stressed vegetation immediately adjacent to the lagoon. Because this alternative would result in contaminants remaining on site above health-based levels, CERCLA requires that the site be reviewed every five years.

Alternative LS-3: Excavation/Off-Site Treatment of Hot Spot/Off-Site Disposal

Estimated Capital Cost:	$1,294,000
Estimated Annual O&M:	$0
Estimated 5 Year Review Cost:	$0
Estimated Present Worth:	$1,294,000
Estimated Construction Time:	four months

The lagoon sediments and berm soils contaminated with COCs (approximately 1000 cubic yards) would be excavated and disposed off site. Sampling during the RI indicates the likelihood that hot spots of contamination exist within the lagoon sediments. A conservative costing measure, it was assumed that any goon sediments found to exhibit hazardous characteristics would be incinerated with the remaining ash being disposed of in a RCRA Subtitle C landfill, and those sediments found to be non-hazardous would be disposed off site in a RCRA Subtitle D landfill. All excavated areas would be backfilled with suitable fill and regraded. The area of contaminant-stressed vegetation immediately adjacent to the lagoon would be excavated and backfilled with, compatible soils and at a grade that will preserve a wetland hydrogeology and support wetland vegetation. Any sediments found in the drainage ditch that exceed the cleanup criteria for the contaminants of concern will be excavated and backfilled with compatible soils.

Alternative LS-4: Excavation/Off-Site Incineration/ Off-Site Disposal

Estimated Capital Cost:	$2,454,000
Estimated Annual O&M:	$0
Estimated 5 Year Review Cost:	$0
Estimated Present Worth:	$2,454,000
Estimated Construction Time:	three months

A total of approximately 1000 cubic yards of organic contaminated lagoon sediments would be excavated, packed in drums, and transported to a RCRA permitted incineration and disposal facility. The lagoon sediments would be incinerated and appropriately disposed of off site. Incineration is a thermal process that destroys all forms of combustible waste materials. All excavated areas would be filled with clean soil and graded. The area of contaminant-stressed vegetation immediately adjacent to the lagoon would be excavated and backfilled With compatible soils and at a grade that will preserve a wetland hydrogeology and support wetland vegetation. Any sediments found in the drainage ditch that exceed the cleanup criteria for the contaminants of concern will be excavated and backfilled with compatible soils.

SHALLOW GROUNDWATER ALTERNATIVES

Alternative GW-1: No Action

Estimated Capital Cost:	$0
Estimated Annual O&M:	$0
Estimated 5 Year Review Cost:	$36,500
Estimated Present Worth:	$102,000
Estimated Construction Time:	None

CERCLA and the NCP require the evaluation of a No Action alternative to serve as a point of comparison with other remedial action alternatives. The No Action alternative for the shallow groundwater would allow the site to remain in its present condition. Because this alternative would result in contaminants remaining on site above health-based levels, CERCLA requires that the site be reviewed at least every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes. No other action is proposed under this alternative.

Alternative GW-2: Limited Action

Estimated Capital Cost:	$27,300
Estimated Annual O&M:	$29,000
Estimated 5 Year Review Cost:	$7,200
Estimated Present Worth:	$499,000
Estimated Construction Time:	one month

The limited action alternative for the contaminated shallow groundwater underlying the site would include a lone-term monitoring program, and an institutional control program. The monitoring program would include the installation of an additional well, and the sampling of all existing and new wells on a periodic basis. If, in the future, the monitoring program detects an exposure to contamination from the site in excess of drinking water standards, additional remedial action would be considered. The institutional control program would place well restrictions on the use of shallow wells in the immediate vicinity of the site.

Alternative GW-3: Collection and Treatment

Estimated Capital Cost:	$2,804,000
Estimated Annual O&M:	$370,000
Estimated 5 Year Review Cost:	$36,500
Estimated Present Worth:	$8,415,000
Estimated Construction Time:	two years

This alternative would provide for on-site collection and treatment of contaminated groundwater, Collection of groundwater would be accomplished through the installation of trenches along the downgradient portion of the property. Three cleanup processes would be necessary to treat the Navesink Formation groundwater: pretreatment to reduce scaling or fouling, organic compound removal, and inorganics removal. The treatment system required for these procedures would consist of: 1) Chemical Precipitation and Settling, 2) UV Oxidation, and 3) Ion Exchange. Groundwater would need to be treated to meet both New Jersey Surface Water Quality Criteria and Federal and State drinking water standards (MCLs) prior to surface water discharge.

EVALUATION OF ALTERNATIVES

During the detailed evaluation of remedial alternatives, each alternative is assessed against nine evaluation criteria, including, overall protection of human health and the environment, compliance with applicable or relevant and appropriate requirements, long-term effectiveness and permanence, reduction of toxicity, mobility or volume, short-term effectiveness, implementability, cost, and state and community acceptance.

The evaluation criteria are described below:

- ! Overall protection of human health and the environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.

- ! Compliance with applicable or relevant and appropriate requirements (ARARs) addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other federal and state environmental statutes and requirements or provide grounds for invoking a waiver.

- ! Long-term effectiveness and permanence refers to the ability of a remedy to maintain reliable protection of human health and the environment over time, once cleanup goals have been met.

- ! Reduction of toxicity, mobility. or volume is the anticipated performance of the treatment technologies a remedy may employ.

- ! Short-term effectiveness addresses the period of time needed to achieve protection and any adverse impacts on human health and the environment that may be posed during the construction and implementation period until cleanup goals are achieved.

- ! Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement a particular option.

- ! Cost includes estimated capital and operation and maintenance costs, and net present worth costs

- ! State acceptance indicates whether, based on its review of the RI/FS reports and Proposed Plan, the state concurs, opposes, or has no comment on the preferred alternative.

- ! Communi1y acceptance will be assessed in the Record of Decision following a review of the public comments, received on the Proposed Plan.

The following is a comparative analysis of the remedial alternatives for the K&M site, based upon the evaluation criteria noted above:

! Overall Protection of Human Health and the Environment

The No Action Alternative (LS-1) would not limit or prevent exposure to the contaminated lagoon sediments. Therefore, it would not provide adequate overall protection of human health and the environment. Alternative LS-2 would prevent exposure to the lagoon sediments through the use of a cap or cover. While capping would offer adequate protection of human health, future threats to the environment would remain since the contaminants would remain beneath the cap. Alternative LS-2 would offer better overall protection of human health and the environment than LS-1. The excavation and off-site treatment alternatives, LS-3 and LS-4, would eliminate any potential future exposure. Alternatives LS-2, LS-3 and LS-4 would achieve protectiveness at the completion of construction.

Although no current exposure to contaminated groundwater is occurring, future exposure is possible. Alternative GW- 1 does not incorporate any remedial action. A five-year review would involve sampling and analysis of existing groundwater monitoring wells. Therefore, Alternative GW-1 would provide some protection of human health. Alternative GW-2 offers an groundwater monitoring program and incorporates well restrictions. If, during the groundwater monitoring, contaminated groundwater is found to be migrating to a drinking water source, remedial action would be considered. Alternative GW-2, in comparison to GW-1, would more effectively ensure the overall protection of human health. Alternative GW-3, through pumping and treating contaminated groundwater, would offer an increased level of overall protection of human health and the environment compared to GW-1 and GW-2.

! Compliance with ARARs

Alternative LS-1 would not achieve the health-based clean goals for the lagoon sediments. The cap in Alternative LS-2 would prevent exposure to lagoon sediments, and therefore would satisfy the remedial action objective. Alternatives LS-3 and LS-4 would meet all ARARs for the sediments.

Although Alternative GW-1 would not accomplish the remedial action objective for the groundwater, there is no current exposure contaminated groundwater. Therefore, contaminant-specific ARARs (MCLs) are not applicable but could be considered relevant and appropriate. Alternative GW-2 would meet ARARs and effectively ensure the prevention of exposure to contaminated groundwater through a more comprehensive groundwater monitoring program and well restrictions. Alternative GW-3 would treat the groundwater until MCLs are attained within the aquifer; ARARs for extraction and treatment prior to discharge would also be met.

! Long-term Effectiveness

Alternative LS- 1 would not maintain reliable protection of human health and the environment. Alternative LS-2 would provide acceptable reduction in risk, however, hazardous substances would remain on site, requiring long-term maintenance to preserve its protectiveness. Alternatives LS-3 and LS-4 would remove all hazardous substances in the lagoon sediments, and therefore, would provide the best long-term effectiveness.

Although contaminant levels in the shallow groundwater are above MCLs, they are expected to gradually reduce, through natural attenuation, to health-based levels. Therefore, Alternatives GW-1 and GW-2 would eventually provide adequate long-term protectiveness. Alternative GW-2 incorporates a more comprehensive monitoring program, and therefore, would more iably ensure protectiveness of human health than Alternative GW- 1. Alternative GW-3 would be consistent with the long-term effectiveness goals for the site by treating the groundwater until MCLs are achieved, or it becomes technically infeasible to attain remediation goals.

! Reduction in Toxicity, Mobility, or Volume

Alternative LS-1 would not achieve any reduction in toxicity, mobility or volume of the lagoon sediments. Alternative LS-2 would result in a reduction in mobility of the COCs in the lagoon sediments, but would not reduce toxicity or volume. Capping would significantly reduce infiltration of runoff through the lagoon sediments, transport of lagoon sediments via surface runoff, and volatilization of COCs in the lagoon sediments. Alternatives LS-3 and LS-4 would reduce the toxicity, mobility and volume of the COCs in the lagoon sediments.

Alternatives GW-1 and GW-2 would, over time, achieve reductions in toxicity and volume of the low levels of COCs in the groundwater through natural attenuation. Alternative GW-3 would reduce the toxicity, mobility and volume of the COCs in the groundwater through active treatment in a shorter period of time.

Short-term Effectiveness

Alternative LS-1 would not have any adverse short-term impacts. Alternatives LS-2, LS-3 and LS-4 would involve disturbing the lagoon sediments to varying degrees, which would generate dust and volatile emissions. Alternative LS-2 would create minimal disturbance of the sediments and short-term impacts during construction of the cap. Excavation in Alternatives LS-3 and LS 4 would have the most short-term adverse effects. These alternatives may require air monitoring and engineering controls to reduce airborne dust and emissions. All of the lagoon sediment alternatives would require implementation of a health and safety plan to minimize any risks to on-site workers and nearby residents.

Alternative GW-1 would not have any adverse short-term impacts. Alternative GW-2 would have minimal short-term impacts associated with the installation and sampling of a monitoring well. Alternative GW-3 would have the greatest short-term impacts, namely hazards associated with the extraction, treatment, and disposal of contaminated groundwater. Alternatives GW-2 and GW-3 would require the implementation of a health and safety plan tor minimize the associated short-term risks.

! Implementability

The technical and administrative feasibility of implementing Alternative LS-1 is minimal. The only activity conducted under Alternative LS-1 would be the required five year review. Cap or cover construction, in Alternative LS-2, can be easily implemented using readily available technology. Alternatives LS-3 and LS-4 also incorporate easily implementable technologies. Alternative LS-4 may experience more administrative difficulty than LS-3 due to the potentially limited Availability for off-site hazardous waste incineration capacity.

The technical and administrative feasibility of implementing Alternative GW-1 is minimal. The only activity conducted under Alternative GW-1 would be the required five year reviews. Administratively, Alternative GW-2 would require the implementation of well restrictions for the affected area. Alternative GW-3 would be more complex in its technical and administrative implementation than GW- 1 and GW-2.

! Cost

The estimated present worth costs for the lagoon sediment alternatives are as follows: $112,600 for Alternative LS-1, $796,000 for LS-2, $1.29 million for LS-3 and $2.45 million for LS-4. In evaluating cost effectiveness, Alternative LS-3 that satisfies the Remedial Action Objectives to the greatest extent at the least cost.

The estimated present worth costs for the groundwater alternatives include $112,600 for Alternative GW- 1, $499,000 for GW-2, and $8.41 million for Alternative GW-3. Of the alternatives that accomplish the Remedial Action Objectives for the groundwater and provide for the protection of human health, Alternative GW-2 is the most cost effective.

! State Acceptance

The State of New Jersey supports the preferred alternatives presented in this Proposed Plan.

! Community Acceptance

Community acceptance of the preferred alternatives, will be assessed in the ROD following review of the public comments received on the Proposed Plan.

PREFERRED ALTERNATIVES

Based upon an evaluation of the various alternatives, EPA and NJDEP recommend Alternative LS-3: Excavation/Off-Site Treatment of Hot Spots/Off-Site Disposal for the lagoon sediments and Alternative GW-2: Limited Action for the groundwater. The components of the Preferred Alternatives are:

For lagoon sediments (Alternative LS-3):

> Approximately 1000 cubic yards would be excavated and disposed off site. Any lagoon sediments found to exhibit hazardous characteristics would be transported off site to a permitted hazardous waste treatment and disposal facility. Those sediments found to be non-hazardous would be disposed off site in a RCRA Subtitle D landfill. All excavated areas would be backfilled with suitable fill and regraded. The area of contaminant-stressed vegetation immediately adjacent to the lagoon would be excavated and backfilled with topsoil and seeded to promote vegetative growth. Any sediments found in the drainage ditch that exceed the cleanup criteria for the contaminants of concern will be excavated and backfilled with compatible soils.

For groundwater (Alternative GW-2):

> A comprehensive groundwater monitoring program would be established, including installation of an additional monitoring well, and sampling and analysis of all new and existing monitoring wells. Additionally, well restrictions on the affected groundwater would be incorporated. NJDEP will establish a Classification Exemption Area (CEA) based on the groundwater monitoring to ensure that new wells will not be installed without appropriate precautions.

The preferred alternatives (Alternatives LS-3 and GW-2) would achieve cleanup objectives, and at less cost than the other options. EPA and the NJDEP believe that the preferred alternatives would be protective of human health and the environment, would comply with ARARs, be cost effective, and would utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

In summary, the preferred alternatives are protective of human health and the environment, comply with federal and state requirements that are legally applicable or relevant and appropriate to the remedial action, and are cost effective. This remedy utilizes permanent solutions and alternative treatment technologies to the maximum extent practicable. Therefore, EPA believes the preferred alternatives provide the best balance among alternatives with respect to the evaluation criteria..

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Representatives of the U.S. Environmental Protection Agency

Invite you to Attend Public Meeting

on the Proposed Clean Up of the

Kauffman & Minteer Superfund Site in Jobstown, N.J.

The Time: 7:00 p.m.

The Date: Tuesday, July 23, 1996

The Place: Springfield Township Municipal Hall
Jacksonville-Jobstown Road
Jobstown, N.J. 08041

Representatives from the EPA win give presentations on the proposed clean UP of the Kauffman & Minteer superfund site, and will be available to answer your questions and take public comment. If you wish to review site-related documents, they are available to the public at the Town Clerk's office at the above address. Please make every effort to attend this meeting and if you have any questions you may contact Ann Rychlenski, Community Relations Coordinator, U.S. EPA, 212/637-3672.

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THE UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

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IN RE: :

:

KAUFFMAN & MINTEER :

SUPERFUND SITE :

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PUBLIC MEETING

SPRINGFIELD TOWNSHIP MUNICIPAL HALL

2159 Jacksonville Road

Jobstown, New Jersey New Jersey

Tuesday, July 23, 1996

7: 00 p.m.

B E F O R E:

CHARLIE TENERELLA, Section Chief, Hearing officer

GUY J. RENZI & ASSOCIATES

824 West State Street

Trenton, New Jersey 08618

609-989-9199 or 800-368-7652 (TOLL FREE)

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PAOLO PASCETTA, EPA, Program Manager

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PAM PIERCE, Senior Engineer (TAMS Consultant)

MELISSA GIRARD, Remedial Project Manager

JANET FELDSTEIN, Section Chief

MARY LOU PARRA, Representative from NJDEP

INDEX 0F SPEAKERS

MS. RYCHLENSKI: Good evening. Thank you all for coming out here tonight. My name is Ann Rychlenski, and I'm the Community Relations Coordinator from the U.S. Environmental Protection Agency for the Kauffman and Minteer Superfund Site.

I want to thank you all for coming out here tonight. This meeting is for EPA to present to you its proposed plan for the cleanup of the Kauffman & Minteer site. And I'm just going to go through a couple of things very quickly before we open up the floor.

I want to introduce my colleagues here from EPA and also from TAMS Consultants. They are our contractors that are working on this site for us.

I'm going to start at the far end of the table. Pam Pierce. Pam is a Senior Engineer with TAMS Consultants.

And if you take a look at your meeting agenda, you'll see that Pam is going to be giving the results of the investigation that we did out at the site.

And then, at the other end here, is Paolo Pascetta. Paolo will be the new Remedial

Project Manager for this site. I'm going to talk a little bit about that. It's sort of changing hands due to a reorganization at EPA.

And then, to my immediate right is Charlie Tenerella. I think some of you know Charlie. Charlie has been in other meetings down here.

Charlie is the Section Chief for this particular site. But that will be changing, too, and I'll be introducing the new Section Chief for that under the EPA reorganization.

And right here to my left is the lady who has been the Project Manager for this site. This is Melissa Girard. And she's going to be giving a presentation, also, on our Proposed Plan for the cleanup of the site. And Charlie is going to be talking to you a little bit about how Superfund works.

It's been a while since we've been out here. And maybe some people have forgotten. I don't whether things have changed, whether there are interesting policies going on that may effect the site, but Charlie is going to talk to you a little bit about that.

And again, like I said, the purpose of the meeting is to talk about what it is that we are proposing for the cleanup of Kauffman and Minteer.

Now, one of the reasons that we hold a public meeting is to get public comment. Because one of the criteria by which EPA makes a decision on how we clean up a site, if to clean up a site, one of the things we look at is public comment.

So we are here tonight to hear your concerns, to hear your questions, to hopefully answer them.

And we have a stenographer here this evening for that purpose. She will take your comments down, your questions down. Like I said, we will answer them.

There's a document that we put out after we go through a public meeting, it's called a Responsiveness Summary.

It's exactly lay as it sounds. It is our responses to your questions and comments. That is a published document that will come out a little while later along with this transcript from this meeting.

Because a transcript is being done tonight, I'm going to ask you all to please hold your questions until the very, very end. When you do ask your questions, please stand up, speak very clearly, give your name if you're comfortable with that. If you're not, that's okay. But I do ask that you mention where it is that you live. Just the town is fine. And please do that so that we could have an accurate recording of this particular meeting.

It makes it a lot easier on the person who is doing the transcription. So please do that when we get to the very, very end.

A few other things that are going on here, and when we look at public comment, we look at the meeting itself and what you're to be hearing here tonight, there are other ways to look at a site.

We have an Information Repository. And that's made up of the documents that are generated by EPA that are pertinent to this particular site.

You can find those documents in Virginia Freck's office in the Office of the Clerk. Virginia you want to say.

MS. FRECK: Hi.

MR. RYCHLENSKI: Okay. Virginia has been very good, Springfield Township has been real good, about holding those documents for us and keeping them in good order.

You are welcome to come and look at them at any time, make copies if you'd like. And you can get an good idea of what has happened on the site and the history of it so that you could put things into perspective.

We have a public comment period on this site as we do with all others when we come to this point when we put out a Proposed Plan for cleanup.

There will be comment taken here tonight. But if there are things that you may think of or if you wish to investigate further and send your comments in writing, you can send them to Melissa Girard.

And we need to have those postmarked by close of business August 7, 1996. So if you have anything written, please make sure you get them to Melissa by that time.

Now, you can find Melissa's address in this, in the Proposed Plan. I hope you all have a copy of this. They're right outside.

Please, take a copy this so that you can read through the Proposed Plan and understand exactly what it is that we're going to be doing.

Also, please take a meeting agenda if you don't have one. And, also, make sure that you sign in. If you don't sign in, I can't keep a good mailing list and keep it up to date.

So this way, if your name is on there with your address, I can at least keep you abreast of the other things that are going on at Kauffman and Minteer.

Before I turn this over to Charlie to talk to you a little bit about Superfund sites, I just want to introduce the other people that are here this evening and that will be taking over the site.

Again, Paolo Pascetta, who will be the new Remedial Project Manager; and Janet Feldstein, you want to say hi?

MS. FELDSTEIN: Hi.

MS. RYCHLENSKI: She will be taking Charlie's place on this one. Again, like I said, there's been a reorganization at EPA.

I also want to acknowledge two

people. There is a lady by the name of Mary Lou Parra who is here from New Jersey DEP.

Mary Lou, want to say hi?

MS. PARRA: Hi.

MS. RYCHLENSKI: Thank you. And also, I want to acknowledge Martin Poinsett, longtime mayor. I met Mr. Poinsett a very long time ago. Thanks for being here and for the continuity, certainly.

And without further ado, let me hand this over to Charlie.

MR. TENERELLA: I wanted to give you just a little overview of what Superfund is. It's basically the federal law that cleans up hazardous waste sites around the country.

And the first step in that process is for a site to be listed on something we call the National Priority List. And Kauffman and Minteer made that list a number of years ago.

What that allowed us to do, was use federal money to study the site, do a full scale of what we call a Remedial Investigation.

And also, in the past couple of years, in fact, there has been some activity at the site while we have taken some activities in an area we call Removal Actions. Where we are allowed to bring our staff out quickly and spend federal money to take some of the, in this case, wastewater out of the lagoon and some trailers and some drums and things that were on the site. And we got those out quick.

But that's -- we knew we were going take it off, but we got that done quickly without going through the full process where we are now, something called a Record of Decision, which is the full scale cleanup.

In the meantime, we concurrently have been looking at the site to determine what risks it had.

When we first came out here -- I've had the site for a long. When we first came out here, it was some sense that Kauffman and Minteer might be a rather nasty site, either from a public health perspective or ecologically. Because there was some -- I think there was a dead duck or something, 'dead animals in the area. And as we did our initial investigations, we found that it wasn't quite so bad here.

In fact, one of the burdens we've had on the site that's caused us a long time in coming back to you with this decision was that the risks were not extreme at the site. And we had to question what kind of an action to take, if any, at the site.

So the good news is, that this is not a real problem site. The bad news is, it took us a while to get here to tell you that. But we are going to take some actions which will be described to you tonight.

Right now we're in the process of the public comment period before we issue a former Record of Decision.

What that does is, it allows the agency to use the Federal Superfund to pay for the full scale cleanup, whatever is determined to be the cleanup in our plan, and then we could go on from there.

Realistically, right now, money is an object. It wasn't a couple of years ago, but it is now in terms of the priority setting nationally for site cleanups.

And as I said before, as we studied

BY MS. PIERCE

Kauffman and Minteer and found out that we don't have a lot of heavy risks, and where we did have some risks we took out the offending chemicals quickly and earlier, the remaining part of the cleanup may not happen immediately because funds may not be available.

Because there is a national limited pot of money now, and the priorities are set based on public health issues.

And Kauffman and Minteer is not an extreme public health danger, so it might be some time before the actual cleanup can get started.

When it does, because of the scale of cleanup on this site, we think we can get it done rather quickly. And it won't take a number of years like a dozen or so of the larger sites that we have in New Jersey. So that's where we are now.

We'll go into some detail in terms of what we found on our investigations and what our plans for the cleanup are. And we'll try to keep the presentations fairly short and then open it up for questions, and use the detail of your questions to provide other answers to you.

Thank you.

BY MS. PIERCE

MS. RYCHLENSKI: Pam.

MS. PIERCE: Can everyone see this? I'd like to start by giving you a little bit a of background about the Kauffman and Minteer site.

First, it operated as a transport company for bulk liquids. Some of the chemicals that they transported included plasticizer agents and soaps.

As part of the operations, Kauffman and Minteer rinsed the trucks after transporting the bulk liquids and disposed of the wastewater, the wash water, into an on-site lagoon which is shown here in blue (Indicating).

Now, the site is located on the corner at the intersection of Monmouth Road and Jobstown-Juliustown Road.

The property itself is only five and-a-half acres, but for the purposes of Remedial Investigation, we considered it to be a 25 -- roughly a 25-acre area that's bounded by the -- that includes the site in the marsh area, which is to the east of the site over towards Barker's Brook, which is this line here (Indicating) towards the south of the site and along Jobstown-Juliustown Road. So that was what

BY MS. PIERCE

we considered as the site in our Remedial Investigation..

To give you a little bit of a history on the work that's been done thus far at the site. As Charlie explained, there have been several -- the site has a long history. And there have been several investigations of the site between the period of roughly 1981 to 1988.

In 1985, a Site Investigation was performed where they determined that there was enough of a potential risk associated with the site to place it on the National Priorities List, and that occurred in 1989.

In 1991, EPA removed the liquid contents of the lagoon. And the Remedial Investigation was conducted between 1991 and 1995. And that's the bulk of- what I'll be talking about tonight.

In 1995, EPA also removed tankers and drums containing wastewater that were on the site.

The Remedial Investigation was broken down into seven major components. The first of which was the geophysical survey and soil gas

BY MS. PIERCE

survey.

Geophysical survey is where we evaluated the subsurface on the site and tried to get some idea of the characteristics of the site.

We investigated the characteristics of the Navesink aquifer, which is the shallow aquifer that derives directly beneath the site, as well as the characteristics of the Wenonah-Mount Laurel aquifer, which is the deeper aquifer and below the Navesink, which is where the wells in the area obtain their groundwater -- their potable water from.

We also sampled from the lagoon and took various surface water samples across the site. This figure shows some of the lagoon surface soil sampling locations (Indicating).

We took samples around the perimeter of the lagoon to try to get a representative sample to get an idea what the contents of the lagoon sediments were.

And we also took surface soil samples across the site, including samples in the marsh, to address or to investigate potential contamination in the marsh area.

We also did a surface water and

BY MS. PIERCE

sediment sampling. These locations, as you can see. We took samples upstream of the site on Barker's Brook; we took a sample midstream and a sample downstream of the site.

We also took a couple samples along the drainage ditch which runs along Jobstown-Juliustown Road. This overhead also shows the groundwater sampling locations.

We installed nine wells to supplement the three existing wells. The three existing wells were wells that were in the shallow Navesink aquifer, and we installed the three deep wells.

Of those nine, three of them were deep wells down in the Wenonah-Mount Laurel aquifer. Then the remaining six were shallow wells as well.

We investigated the subsurface to try to get an idea of the extent of contamination below the site. How much of any site contamination has migrated downward.

And this indicates some of the locations we investigated, which includes the septic tank area off the northern corner of the existing building; within the underground storage tank area,

BY MS. PIERCE

which is south of the building; as well as the wastewater collection pit that was used to store some of the wash water prior to transfer to the lagoon.

Also, as part of the Remedial Investigation, we conducted an ecological investigation to determine if there ecological impacts associated with the contamination that's on-site.

It's not listed here, but we also performed a Human Health Risk Assessment to evaluate the impacts, if any, on human health due to exposure to site contaminants.

The results of the Human Health Risk Assessment. We determined that there was some risk associated with ingestion of the Navesink groundwater. And that risk was driven by vinyl, chloride and beryllium. And there was also some risk associated with ingestion of lagoon sediment and that risk being phthalates. I want to qualify the risks here in that.

For the Navesink ingestion scenario. What that requires is, that you are withdrawing water, you're ingesting water that has been withdrawn from the site.

BY MS. GIRARD

There's no evidence of any of the contamination moving off the property boundaries. So you would be required to drink water on a daily basis from a well on the site for a matter -- for a period of years.

And the ingestion of lagoon sediments, again, is a fairly conservative scenario. And it's somewhat self explanatory.

You know, if you ingest the -- if you have access to the lagoon sediments and ingest them for a period of seven years, then there is a risk associated with that as well.

We also determined, that for the ecological investigation that the real -- the only real evidence of any ecological stress on the system was the vegetation that's directly adjacent to the marsh, which is a result of the lagoon overflowing into the marsh.

That was the only evidence of any contaminated-related stress to the Ecological System.

MS. GIRARD: okay. So I took Pam's information and the information from the Remedial Investigation. And the next step involved is to do

BY MS. GIRARD

what's called a Feasibility Study.

And what that does is go over some different alternatives to address the areas of concern at the site, and that being the lagoon sediments and the Navesink groundwater.

There's a number of general Response Actions that we look at in the FS. Anywhere from being No Action, which will be nothing at all, to a Limited Action. And then we have Containment, On-site Treatment and Off-site Treatment.

And from that we go to the Proposed Plan, and we develop Remedial Action Objectives. Those Remedial-Actions Objectives consisted of preventing exposure through ingestion of contaminated lagoon and drainage ditch sediments; restoring an area of contaminant-stressed vegetation immediately adjacent to the lagoon; and preventing' exposure through ingestion of on-site contaminated groundwater.

The drainage ditch sediments are something that we will be addressing during design. There was one hit of phthalates over our cleanup criteria in a drainage ditch. That testing was done in the early 1990's.

BY MS. GIRARD

We want to confirm that that is still a problem, and if so, we will be taking that out with the lagoon sediments at the time of the Remedial Action.

What the Proposed Plan does is -- we have nine evaluation criteria that we use to determine which Remedial Action we're going to take at the site.

Of course, the first and most important is, Overall Protection of Human Health and the Environment.

Second, is the Compliance With ARARs, which is Applicable, Relevant and Appropriate Requirements. Basically what that is, is just the federal and state statutes and regulations that apply to these alt alternatives.

The third one is, Long-term Effectiveness and Permanence. Just to make sure that this Remedial Action will take care of. the problem associated with the site.

Reduction of Toxicity, Mobility and Volume. That's pretty self explanatory.

Short-term Effectiveness. If you can do it in a short period of time and what's the

BY MS. GIRARD

effectiveness of doing it in that period of time.

Implementability. That's self explanatory. How implementable is the alternative.

Cost. How much it's going to cost with respect to all the other criteria.

State Acceptance is one of our criteria as well, and we do have the state's concerns for the Proposed Plan on this.

And the last, but not least is, Community Acceptance. And that's why we're here today.

Okay. Lagoon Sediment Alternatives. These are the alternatives that have been chosen for the Proposed Plan from evaluation through the Feasibility Study that we think pertain the most to what is the issue at the site for the lagoon sediments.

No Action has to be evaluated. It's just one of our requirements to give sort of a baseline for what occurs here.

The second one is a cap or a cover that would adequately help the protection of human health and the environment at a relatively decent cost.

BY MS. GIRARD

The third one is excavation and off-site treatment of hot spots and off-site disposal.

And what that would entail is pretty much similar to the last one, which is excavation, off-site incineration, and off-site disposal.

However, what we believe at the site, from the data that we've collected, is that there is distinct spots of contamination in the sediment -- in the lagoon sediment that aren't necessarily widespread.

So what we want to do is not necessarily spend the absolute amount of money, taking out all of the sediments and treating them all at once.

What we're planning to do is, actually, to take out all of the sediments, test them, see which ones are hazardous.

If they're hazardous, then we'll send them to a RCRA Subtitle C treatment and disposal facility.

The rest of those sediments that are not hazardous will end up going to a Subtitle B facility, which is just a municipal landfill.

BY MS. GIRARD

And this is just some of the -- I just want to show you this quickly, about what we're looking at here.

These are the different time frames it will take to implement each of the plans or each of the options, and what they're cost would be.

As you could see, the difference between not doing anything here, a hundred and two thousand dollars in no time, and what we're actually going to be presenting as our preferred alternative, which is excavation, off-site treatment of hot spots and off-site disposal. You know, which is approximately 1.2 million dollars.

The difference between those two and the excavation and off-site incineration and disposal is relatively large. And the implementation time is the same.

And the protection to the human health and the environment is just the-same for any residents in this area.

The sediments are going to be taken off-site and either treated, like I said, in a hazardous waste facility or sent to a Subtitle B landfill. We're not planning on leaving any of the

BY MS. GIRARD

sediments here.

So the third option and the fourth option are pretty much the same from your standpoint.

As for the shallow groundwater alternatives, same thing as for the lagoon sediment alternatives, No Action has to be evaluated as a baseline.

The second alternative was a Limited Action, which includes monitoring and institutional controls.

What that basically consists of, is that during design we're going to -- we have -- as Pam, who spoke before, we have some monitoring wells that are already in existence now.

We are planning on installing an additional monitoring well to make sure that we can adequately monitor the shallow aquifer and see if it's contaminating the lower aquifer, which is -- as of now, we have no evidence of that. And there's no risk associated with that, as Pam mentioned. So that's part of what that action calls for.

As well as institutional controls, which would basically be well restrictions on the

BY MS. GIRARD

Navesink so that nobody could actually build a well that was used for drinking water purposes or any other purposes, for that matter, and registered with the New Jersey Department of Environmental Protection; is that correct, the well restrictions?

Yeah.

And the third option is collection and treatment. This option has a number of things involved with it.

You'd have to -- we'd have to build a big collection trench all along the downgrading inside of the lagoon and use a number of treatment trains.

I won't get into what that is because it's very technical and complicated. If you want more information on that I can send it to you. But there's a number of things involved with treating that, and it would take a number of years to do that.

And actually, to be honest, we're not even sure if it would work because the yield of the Navesink is so low that it would be very difficult to even collect most of this groundwater.

And just like I did with the the sediment alternatives, I just wanted to show you sort of a comparison as to the implementation time and the cost involved.

Limited Action would take approximately one month to implement at a cost of about $500,000 for the actual monitoring and institutional controls that are involved with that.

Limited Action will also have annual monitoring as well as a five-year detailed review of what is actually occurring on the site.

At that five-year review, we determine whether or not any contamination has spread into the drinking water aquifer below that, that's the Wenonah-Mount Laurel.

If that's the case, then we reevaluate it and possibly do a Remedial Action as a result.

And finally, these are EPA's preferred alternatives after going through all the nine criteria that I explained before,

These are the two alternatives we think that will most adequately address the problems at the site. And those are excavation and off-site treatment of all -- of hot spots, and we'll dispose of all sediments on the site.

BY MS. GIRARD

And for the shallow groundwater. We will be installing an additional monitoring well and doing annual monitoring of that shallow aquifer to make sure that nothing has spread to the underlying drinking water aquifer, and to actually monitor the actual natural attenuation, or, I guess what you would say, disintegration of the chemicals that are actually in the shallow aquifer.

So those are our preferred alternatives. I'll hand it over to, I guess, Ann. Which I will have, now, a question-and-answer period. And we can try to address any questions you may have. Thank you.

MS. RYCHLENSKI: Thank you, Melissa once again, I'm just going to ask you to please wait until you're called upon. I'm going to hand this over to Charlie, and then Charlie can moderate.

And please wait until you're called upon. And, like I said, please speak clearly, identify yourself for the stenographer that's present so that we can have a clear record of this. Charlie. Okay. And we'll open to questions, comments.

MR. TENERELLA: Yes, sir?

BY MR. POINSETT

MR. POINSETT: Mayor Poinsett from Springfield here. I'd just like to go on record as saying, of course we are most concerned with the health, safety and welfare of all of our residents.

I've read over your report. And I would like to go on record as agreeing with the EPA and the DEP while selecting the LS-3 alternative, excavation/off-site treatment of the hot spots/off-site disposal of the material, and also on record as a agreeing with the EPA and the DEP with the GW-2 Limited Action, which is basically monitoring the well water in the area.

And I think that we should go on record, the Town Council, and I'm going to recommend that at the next meeting.

I'm here tonight as the mayor of the town. And I'm going on record as recommending that. And if it takes further action, if we have to go on record with our congressman or whoever,.that puts the okay on spending of the Superfund money, I think we'll do that also.

Thank you.

MR. TENERELLA: Yes, sir?

MR. MILLER: My name is Ron Miller.

BY MR. MILLER/MS. STEVENSON

I live next to the site.

There's two test wells right across the street, I was wondering if one is a deep one and one is a shallow one, and are there any contaminants in the shallow one?

MS. GIRARD: Where exactly do you live?.

MR. MILLER: Right on the corner.

MR. GIRARD: Right on the corner?

MR. MILLER: Um-hum.

MS. GIRARD: Yeah, one is shallow and one is deep. And no, there's no contaminants there.

MR. MILLER: Okay. Thank you.

MR. TENERELLA: Veronica Stevenson?

MS. STEVENSON: A couple questions. Clarification. Subtitle D Disposal Facility, that is a municipal landfill?

MS. GIRARD: Correct.

MS. STEVENSON: Okay. So our county landfill would qualify for that, right? It's a municipal landfill.

Just a clarification, too. Where would off-site treatment occur?

BY MR. MILLER/MS. STEVENSON

MS. GIRARD: It would occur at a Subtitle C facility. That facility has not been chosen at this time.

MS. STEVENSON: Which would be -- would that be a municipal sewer plant?

MS. GIRARD: No It would be for hazardous waste.

MR. TENERELLA: No. It's a hazardous waste facility.

MS. STEVENSON: It would be a hazardous waste facility.

MR. TENERELLA: It would be RCRA, RCRA is the acronym, the Resource Conservation Recovery Act, and it regulates all hazardous waste landfills in the country or disposal facilities.

And as Melissa was saying, we have something called ARARs. And those are other regulations of other agencies or EPA and the state agency that we have to abide by.

And one of them is, when we dispose the materials, they have to be disposed of just like an industry would, properly.

MS. STEVENSON: At a Superfund site, then, it would go to this type of facility?

BY MR. MILLER/MS. STEVENSON

MR. TENERELLA: If it's hazardous.

MS. STEVENSON: If it's hazardous. So leachate, like in the Superfund Site, FLR, is being taken presently to Willingboro sewer plant

MR. TENERELLA: That's a different type of contaminant coming off of the landfill as part of the landfill

MS. STEVENSON: It's a leachate?

MR. TENERELLA: Yeah. It's a leachate off of a landfill. It's different than what we have here. We don't have any leachate here. It's not landfilled.

We have sediments in the lagoon. The lagoon water, in fact, a couple of years ago, '91, was removed and treated to a wastewater treatment plant because it was a liquid. The sediments are now heavier, sludge or mud-like material.

MS. STEVENSON: Okay-Then, the difference really is, sediments would be treated in the facility that you would just -- a different type, and then the liquid would be treated

MR. TENERELLA: It won't be a liquid, it will be a solid.

BY MR. MILLER/MS. STEVENSON

MS. STEVENSON: But if it was liquid, it could be treated at a local sewer plant?

MR. PAOLO: It depends. If it's nonhazardous, it's a possibility.

MR. TENERELLA: There are certain types of plants that will accept that kind of liquid and there are others that won't.

In this case, with Kauffman and Minteer, we won't see liquid disposals except, perhaps, from test well or monitoring well water disposal, if need be.

And if it's hazardous, it's disposed of one way. If it's nonhazardous, it could be disposed of in a sewer line like anyone else would do from a household.

So it very much depends on what the contents of the sampling is of the material that we're trying to get rid of.

As I said before in my introduction, the problem that we've had over the years here and has given us somewhat of a delay, unlike most Superfund sites that we deal with, certainly unlike anyone I've ever dealt with, was the big question of, is there a risk at Kauffman and Minteer sufficient enough to spend federal money to take an action? And if so, how much of a risk is there and how much of an action do we take?

So it's kind of the opposite of what we would normally see on a site where we have, perhaps, a serious risk, and we have to -- the scale of the action might be quite large. Here it's quite limited, actually.

MS. STEVENSON: Okay. Another clarification.

Did you investigate the number of wells that were in the Navesink aquifer? You wouldn't consider it an aquifer.

But the Navesink portion, do you know the actual number of residents or are you just making an assumption that there are some wells that are in that area?

Do you know the actual number?

MS. GIRARD: I think there's two. There's one upgradient and one sidegradient, but neither of them are used for drinking water purposes.

MS. STEVENSON: You're talking the residents in the local area. Because you're talking wells that are between 10 and 28 feet. And a lot of these homes are older homes, and they probably wouldn't be registered or on record as having a well the depth of 10 to 28 feet.

But you're sure there are only two residents?

MS. GIRARD: There was a well survey, that was done that went to residents in the area all around the area.

MS. STEVENSON: There was a well survey done?

MS. GIRARD: Yes.

MS. STEVENSON: I reviewed your documents--

MR. TENERELLA: Nobody can actually drink that--

MS. GIRARD: You wouldn't even want to drink it. It's mud, basically. It's just very cloudy, high iron content, that you wouldn't -- I mean, it would be, first of all, aesthetically unpleasing to even drink if you wanted to.

MS. STEVENSON: I just wondered with older homes. Because I know, in the area, there are people that have shallow wells. And 10 to 28 feet--

BY MR. MILLER/MS. STEVENSON

MS. GIRARD: Sure. But there's also -- as Bruce -- Bruce did some work on this as well. Bruce Fiddler who is also with TAMS and did some work additionally on this.

There's an outcropping of the Navesink. So it's not necessarily in all areas 10 to 28 feet deep. It could be as little as, you know, just a couple of feet deep.

MS. STEVENSON: See, I'm taking this from your information that's on record here.

MS. GIRARD: We obviously have to do an average. But there's a definite outcropping of the Navesink where there's basically nothing around there.

MS. STEVENSON: But I want you to be aware that I got all the information that I'm about to question from the Record of Decision on file here.

MS. GIRARD: There's no Record of Decision.

MS. FELDSTEIN: The Administrative Record.

MS. GIRARD: Oh, you mean the Administrative Record.

MS. STEVENSON: Well, I guess.

BY MR. MILLER/MS. STEVENSON

Technical terms, okay. I'm a novice at this.

what I'm concerned about is, in 1984, according to the records on file here, whatever they are, the chemical trichlorethylene, and this is on Page 10 in the first section, lists the Cronin residence of having exceeded maximum contaminant levels of this chemical.

I was concerned. And I went to Ms. Cronin today and I questioned her. She was never, notified. And this is not something new to me. Because this has happened before in this township with the residents that lived near the Superfund Site.

My concern as a resident living near a Superfund site is process. Now, I'm really a little concerned because of -- if this is true, she should have been notified especially when it exceeded maximum contaminant levels.

MR. TENERELLA: In 1984?

MS. STEVENSON: In 1984. I don't care if it happened in 1969. You know, you've got a chemical contamination in your water. The Cronins have children in the family.

MR. TENERELLA: I don't think we'll

be able to answer it now, though.

MR. FIDLER: I just want to comment. Bruce Fidler, TAMS. That was a sample collected by DEP, not EPA. Just to clarify for you.

MR. TENERELLA: Okay. That's a state sample.

MR. FIDLER: That's a state sample, not a federal. Normally they would notify them.

MS. FELDSTEIN: Typically there's notification that the results are provided to any resident who's well was sampled.

So we have to go back -- we'll ask DEP to go back and look at the records, and

A SPEAKER: My water was sampled at that time, and I didn't get a letter from them.

MS. FELDSTEIN: You got the results.

A SPEAKER: I got the results of what the water tested at after that.

MR. TENERELLA: Are you from the state?

A SPEAKER: Yes.

MR. PAOLO: Usually, it's common protocol that whoever comes to sample the wells of the resident will then send the results.

MS. FELDSTEIN: We'll look into that.

MS. GIRARD: That's the Cronin residence?

MS. STEVENSON: Cronin. And then in 1988, you don't list the five residents, but they had phthalates in their water, di-n-butyphthalates and bis (z) ethylhexphthalates in their water.

I don't -- it doesn't say whether that exceeded MCLs. Regardless if it did, I know as a consumer, and I'm sure you, if that were in your drinking water, even if it didn't exceed MCLs and you have children and you're bathing babies, you would want to know.

And we have five people here. Who are you? Okay.

MS. PARRA: What year was that?

MS. STEVENSON: 1988. This is from your documents. Again, from your document -- oh, boy. There's a list of chemicals here.

This one disturbs me. Where you talk about no health risk. Background health statistics survey for Burlington County. Again, taken from your documents.

BY MR. MILLER/MS. STEVENSON

When you do a health survey, evidently you take the whole county. You're not taking this locality. This is what your information says if you read it. Okay. You're taking the whole county and comparing it to the state. I don't see the logic in that.

Quote, Available information on the Springfield Township was reviewed to determine if any sensitive subpopulations were present in the vicinity.

The only subpopulation identified that may be at increased risk are the children living in the vicinity of the site. Page 16 of this section here (Indicating).

MR. TENERELLA: What's the problem? I don't understand your question.

MS. STEVENSON: The problem is, you are stating -- according to this health survey, you're looking for a subpopulation in the vicinity that might be at risk.

MR. TENERELLA: Based on the risks of the chemicals that we have at the levels we have, right.

MS. STEVENSON: Right.

BY MR. MILLER/MS. STEVENSON

MR. TENERELLA: Right.

MS. STEVENSON: You're saying hear, the subpopulation identified.

MR. TENERELLA: That's potentially be at risk.

MS. STEVENSON: You have a potential risk to children.

MR. TENERELLA: Correct.

MS. STEVENSON: Children are more vulnerable. Their bodies are smaller.

MR. TENERELLA: That's why we decided to take the action.

MS. STEVENSON: Right.

MR. TENERELLA: Yes.

MS. STEVENSON: In bathing they could get the chemicals into their system; in breathing in the water they can get the chemical into their system.

MR. TENERELLA: Correct. Although, I wouldn't bring my kids to that sediment lagoon to bathe them.

MS. STEVENSON: And I don't think you would take your children to the Cronin's house to be bathed. I don't think any of you would.

BY MR. MILLER/MS. STEVENSON

And I think if we sat their water in front of you, You wouldn't --

MR. TENERELLA: Where are they getting their water from, the shallow aquifer or the deep?

MS. STEVENSON: They are --

MS. CRONIN: 60 feet.

MR. TENERELLA: That's the deeper one. That's the Wenonah. That's the one that's okay.

MS. STEVENSON: Well, the five residents in '88 that have the chemical contamination the phthalates -- you were saying that there are two residents that had wells in the -- whatever it was. Navesink?

MS. GIRARD: Um-hum.

MS. STEVENSON: So that leaves three other ones with these chemicals in it. That would indicate -- no. You take two--

MR. TENERELLA: That's the kind of information, in the early days of the program or the and do a full Remedial Investigation. When we did additional studies and couldn't find those chemicals, there was no risk any longer. Maybe they went through system.

One thing that this site has unique to other sites is, the cessation-of operations of Kauffman and Minteer helped to cease any chemicals that might have been occurring because of whatever was being transported in the tanker trucks and then washed out.

So as he ceased operations, whatever chemicals might have been appearing in the environment, say in the mid-80s, late-80s, disappeared. So there's nothing for us to remediate any longer, except what we've identified now in the lagoon, and then, of course, the monitored groundwater.

In case there's a problem, part of the Superfund process is that after five years of taking the action that we select, we go back and check it again. We remonitor, if you will, after five years. We look at the site to see if we missed anything.

So if, in this case, Kauffman again, during the five-year period while we're doing groundwater monitoring, if we start seeing a trend for chemicals reappearing, say, that showed up in early '80s, we'd come back and take additional action, if necessary. So this is not the end of the process, if necessary, from a risk point of view.

But right now, given the risk that we have seen in our Remedial Investigations over the last couple of years, there's really not much of a risk other than the sediment. And, of course, that's to children. And so that's what-the report is saying.

MS. STEVENSON: From information I read from environmental books and so forth, I'd like to read this section to you.

Monitoring wells are a type of hit-and-miss system of monitoring. The contamination moves. Some move in plumes, some dissipate.

MR. TENERELLA: Right.

MS. STEVENSON: Okay. Because groundwater moves slowly. A slug of contaminant moving through the groundwater will slow and disperse into a plume, the dimensions of which are controlled by the structure of the aquifer because of the slow rate of travel and the vagaries of slow and dispersion of groundwater making it heavily contaminated in one place, but remain pristine only a few hundred feet away. Size of the openings influence how fast water can flow through the aquifer.

MR. TENERELLA: That's right.

MS. STEVENSON: There's a lot of variables there.

MR. TENERELLA: That's what took us - -

A.) That's what took us time in coming to an assessment of what we should do, and;

B.) Because we wanted to-make sure that the upper shallower aquifer wasn't contaminating the lower drinking water aquifer where people are drinking right now. And that's why we're taking the action on the additional monitoring, exactly that reason.

MS. STEVENSON: You have had --

MR. TENERELLA: You're asking these questions like there's a problem, but

MS. STEVENSON: There is a problem. There is a problem. Big problem for me is, and I have raised this to Town Council, I wanted to know DEP's procedures for notifying people when contamination was found in the water supplies.

Did I not, Mayor Poinsett, did I ask that?

MR. POINSETT: That's correct, yes.

MS. STEVENSON: With a response from the DEP. There aren't

MR. TENERELLA: I'm going to say this. I don't know DEP's regular procedures. But most of the times the Health Department, and it's the State Health Department -- I now in other sites that I've had, when it comes to water supply sampling of local, single, private wells, we usually involve the State Health Department, through us and through DEP, and they're the ones that do the testing for us, get the results, and give them out to residents.

I can't say in this case. I don't remember, going back that far, what exactly happened or who did the sampling.

But the normal protocol for all three agencies, no matter what the results are, whether they're good or bad, is that they're released to the people who's wells are tested.

MS. STEVENSON: Well, the information of the safety of the drinking water doesn't seem to be released. And this is the second case.

And I'll tell you, the first couple that was involved and not being notified is methylene chloride.

MR. TENERELLA: Well, that could be--

MS. STEVENSON: But in the Remedial Investigation Study Report it said, for prudent purposes, the residents will be notified not to drink the water. For prudent purposes.

MR. TENERELLA: Right.

MS. STEVENSON: Right. This couple both died and left several children. They lived very close to the Superfund Site and were never told.

MR. TENERELLA: You can't make a relationship between people dying and being next to the Superfund Site. Most people die.

MS. STEVENSON: They do. And, you know--

MR. TENERELLA: Again, I'm not sure what you're getting at because there's no connection that we saw on a risk basis for the kinds of levels we have, certainly methylene chloride and things like that.

First of all, they are -- tend to be lab contaminants at low levels if you don't find them on a site as a process chemical or something that was used as a cleaning solvent or something like that.

If not, and to be prudent as we say in the report, we still would notify and maybe take action. Again depending on the levels, if they're above MCLs or the lowest level of contamination that you would allow in drinking water.

But at those very, very low levels, we're talking about an additional potential cancer risk. And MCL is defined as a one in a million additional cancer risk to what the regular cancer population is.

And the regular cancer population is something like one in five citizens over their lifetime will get cancer.

So to say there's one in a million additional risks versus the national trend of one in five will get cancer sometime in their lifetime, you can't make that correlation on a given single chemical and say, well, those two people died.

As I say--

BY MR. MILLER/MS. STEVENSON

MS. STEVENSON: I've read enough books--

MR. TENERELLA: -- there's not a connection there unless you have a very, very direct relationship. Which, actually, is quite highly unusual, to have a direct relationship, accepting very, very high concentrations of any chemical.

MS. STEVENSON: See, denial is a big thing with the DEP and EPA. Because every incident where contamination has been found and problems, health problems, have been found, it is all because residents were very aware of clusters, such as Toms River, with that cancer cluster. And now, there is going to be more in depth studies on the water.

That doesn't surprise me because of the concerns and contamination that area faced before.

There was serious--

MR. TENERELLA: You're jumping the gun again because there's nothing proven in Toms River between -- the connection between the health effects of the people and drinking water yet. But they're willing to look because of concern registered by the residents.

BY MR. MILLER/MS. STEVENSON

I'm not an expert on that site. It's not mine. But I know from reading, myself, in the paper and knowing the risk connections of chemicals, that it's going to be very difficult, from a epidemiological point of view, to connect any chemicals at low levels to people dying of any specific disease, except when the chemicals is very specific and is very high level. Anyplace, Toms River or anyplace else. You just cannot make those kinds of connections.

Although the public would like to make them because it's easier to say, it must be "A" and "B", and, therefore, "C". It just doesn't happen that way.

In most cases, the majority of cases, and in rare is the case, where you'll get a direct correlation between health effects or health risks and cleanup of a Superfund site.

And the one example in New Jersey that comes immediately to my mind is radon contamination in some homes in one area of Montclair-Glen Ridge where there is a relationship, direct relationship, between that radon and things like lung cancer, potentially for people. And so that's a very high risk-related site being cleaned up right now.

MS. STEVENSON: See that's

MR. TENERELLA: So where we see those kinds of connections we take very aggressive action. But we have to see the correlation. In most cases we don't if it's very, very low levels affected.

Are we wrong? Maybe people will prove that parts per quadrillion or something was bad for you. But right now, we don't have that proof.

MS. STEVENSON: You don't put too much stock in the MCLs that are given.

MR. TENERELLA: No, that's our baseline. That's we operate from.

MS. STEVENSON: That's your baseline?

MR. TENERELLA: Right. Out of one in a million cancer risks. That's the regulatory baseline, that one in a million additional cancer risk. Anything above that which can give you your MCL or your maximum contaminant level from drinking water, anything above that and you take some action.

MS. STEVENSON: And some

action -- so no action was taken here.

Will you look into why no action was taken in regards to that?

MR. TENERELLA: And Janet will be following up because the site will be transferring to Janet and Paolo.

I'm sure they'll follow up with the state, also. If it was a state sampling event, we won't.'have those records in terms of what might have. happened.

MS. STEVENSON: Also, what I would request of you, and it would make it a lot easier and cheaper for residents in the area to want to have their water tested, if you would supply a list to the Township of the chemicals you think would be the high priority pollutants that may be found in the water.

So that when they have their water tested, they can focus in on this. Because you know that it would cost thousands of dollars to do an in- depth water test.

This would be an asset to the DEP and EPA because you would have individuals paying for their own water to have it tested. And if they can pick up anything, then they can refer that information to you.

MR. TENERELLA: Bruce, is there a list of MCLs in the RI?

MS. FELDSTEIN: Chemicals of concern for the site. Yeah, we can get a list.

MR. TENERELLA: No, but in addition, is there a list of MCLs that compares the chemicals concerned at the site?

MS. PIERCE: Yes, they're in the record.

MR. TENERELLA: So they should be able to get that.

MR. FIDLER: In Volume II in the section on the tables, I'm sure that with the groundwater sampling there is a list, also, of the criteria that they were compared against for drinking water, the MCLs.

If you give me a second, I'm sure I could come up with the specific table that would show that. And it's, of course, already in the record that you have here.

MR. TENERELLA: While Bruce is looking that up so that we can answer it right away, I'd ask if we could answer some other questions, other people's questions.

Yes, ma'am?

MS. BICE: I have a question. Ruth Ann Bice. My property is part -- was at one time, before we bought our house, was part of the trucking of Kauffman and Minteer. They owned our property. Okay.

I was under the impression, when they came in a couple of years ago and tested it, that this lagoon, that they put a barrier around it to keep it so that this water did not move. And that one of the things that was -- we had going for us was the fact that our -- the property in town is very clay and the water was not moving as fast or would not go into the people's wells like as if it was -- this lagoon was someplace else.

MR. TENERELLA: Yeah, the lagoon is sort of self contained. There's a clay layer under it.

The biggest concern we had at the time when we drained the lagoon is, that it was overfilling into those marshlands.

In fact, it was creating that marshland over years as he washed his trucks. That

BY MS. BICE

marshland is a -- sort of artificial, and it was created by the activity of the company. Now the company is out of business. I wonder if that marshland will become dry.

In the meantime, we saw a soap sudsy kind of effect, and you probably saw that years ago in the area. And there was a concern in terms of what was in it and whether there was either a public health risk, which determined there wasn't, or something that's a little more difficult to determine easily is the ecological risk on animals and birds and things in the neighborhood.

And so for both reasons, we drained the lagoon immediately. There's no sense in 'waiting for that and letting it keep overflowing, so we drained it.

MS. BICE: So now what is happening is that most of this rain water is running into there?

MR. TENERELLA: In fact, we had think we tested it at one point to make sure that's all it was.

MS. GIRARD: Right, we did. And it's not hazardous. It's just drain water.

BY MS. BICE

MS. BICE: So, therefore, when you come in and clean that out, okay, then what you're doing is you're just cleaning out what's in the bottom?

MR. TENERELLA: Right.

MS. BICE: And then, what are you going to do with the holes?

MS. GIRARD: Fill it up.

MS. BICE: Fill it up with some soils?

MS. GIRARD: Fill it up with soils and seeded on top.

MS. BICE: How about the other -- behind the property, are you finished back there, the cleanup?

MS. GIRARD: No. That will actually be included with the lagoon sediments.

MS. BICE: Well, what they have cleaned up -- like, they dug up. They were back there digging up, and --- for several months.

Has that been removed from back there?

There was dumpsters back there. Have they removed the dumpsters?

BY MS. BICE

They have dumpsters--

MR. PASCETTA: Most recently, this past summer?

MS. BICE: Yes.

MS. GIRARD: Oh, yeah. That was actually -- that was the newest Removal Action that just occurred. There was a release of some -- it was basically a phthalates contaminated petroleum product that is somewhat -- phthalates are basically a plasticizer. They're what's in a plastic bottle, that type of thing. So they harden a little bit.

But some of that had come out of one of the tanker trucks and we tested it. Because it had some phthalates in it, we decided to get rid of all of those.

So that -- what were in those dumpsters was the contents of those tanker trucks that was then taken off-site.

MS. BICE: They did take it off-site. You see, it's done while I'm at work, so, therefore, I don't know.

MS. GIRARD: Yes, that's been taken off.

MS. BICE: Okay. So really, the

main thing now is just the lagoon?

MS. GIRARD: The lagoon and the area right in back of the lagoon where the marsh area was from the overflow that happened.

MS. BICE: But not like in front of the building towards -- where you go in?

MS. GIRARD: No. Yes, right. That's all taken care of.

MR. TENERELLA: Yes, ma'am.

MS. BAIER: My name is Joan Baier. I live adjacent to the lagoon, and I have some concerns.

It is still coming over on my property. And from the pictures I saw there, it doesn't look like -- I have one section that's about 60 feet long, maybe 8 feet wide that nothing can grow.

MR. TENERELLA: Are you getting rain water runoffs, is that the problem there?

MS. BAIER: It is flooded there.

MR. TENERELLA: When it rains because it's not operating anymore. So you're still getting a water flow. That's probably a rain event in a

BY MS. BAIER

MS. BAIER: Yes. One section is -- it's all green now except for this one section that you can't see now because it's overgrown.

But there is one section that is looks like it's the moon. It's real black and there's nothing growing there, and I'm really concerned about that area.

And it seems to me -- are you going to take care of that area as well?

I was under the impression that I was not going to get cleaned up from your office.

MR. TENERELLA: When we did -- I don't know. I have to ask Pam for this.

When we did the soil investigation, the original soil investigation, were there samples taken toward that property.

MR. FIDLER: Bruce Fidler with TAMS.

Let's put up on the screen the map of the site so you could point out the area you're talking about. And then we can see where the samples were and what's included in the stuff in the lagoon area overflow which might be related to the cleanup.

Okay. Could you point out

BY MS. BAIER

where -- let me let you right into here and you can
point out on the map where your --

MS. BAIER: This is a picture of
where the overflow which seems to be right here.
This is the section I'm concerned about.
(Indicating).
It seems that you've done --

MS. FELDSTEIN: Melissa, is that the
marsh area?

MR. PASCETTA: That's your property,
ma'am?

MS. FELDSTEIN: This is the stressed
area that's talked about in here.

MR. FIDLER: Ma'am, this property
right here is yours?

MS. BAIER: Yes.

MR. FIDLER: Okay. This is included
in the lagoon overflow area which is included in the
remediation of the lagoon sediments.

MS. BAIER: Right. But this is the
area where I think it's overflowing. This is where
you've done your test site.

MR. FIDLER: Right.

MS. BAIER: You haven't done,

BY MS. BAIER

anything here, and this is where my problem is.

It seems you've gone all the way around, but this section here (Indicating). That's where the problem is.

MS. GIRARD: That's where the excavation is going occur as well, and that's going to be--

MR. TENERELLA: In addition to the sediments in the lagoon, let's talk a little bit the area just off the berm that's distressed. I think it's a blackened area it looks like. And it's that area right there that will also be taken out.

So is that your property, ma'am?

MS. BAIER: That is my property.

MR. TENERELLA: Okay. That's going to be handled.

MS. BAIER: I'd also like to know when this nightmare is going to end?

MR. TENERELLA: When we take that off the property and when we get the money.

MS. BAIER: The problem is, since you've done the removal of the water and such, and since you've done activity there, it's under my -- I would like to have my water tested again.

BY MS. BAIER

I was under the impression that I had a 200-foot well. I came to find out that I don't have one. I have a 60-foot well.

And I understand, that when the water tables are very low, which are not this year, but they have been in previous years, it does bring water -- suck water back into the other aquifers.

MR. TENERELLA: It depends on the area of how the aquifer operates.

MS. BAIER: I have a four-year-old grandson. I have four kids in that house and plus an aunt. That's -- actually, two kids plus an aunt. And the thing of it is, four of us have tried to sell our property and we cannot do that.

MR. TENERELLA: Right. I remember we talked a couple of years ago about it.

MS. BAIER: I can't sell that piece -- my property with a sign saying, danger, do not go into it.

MR. TENERELLA: Right.

MS. BAIER: Now, I hear a five-year plan when it's done. Then five years later more tests will be done.

MR. TENERELLA: Let me explain that

BY MS. BAIER

again so you'll -- you don't misunderstand me.

Theoretically, if I was here three or four years ago and it was time for the cleanup, I would be able to say, with some quite degree of confidence, that we would go on in the next couple of months.

Because of the scale of the situation here at Kauffman, we would be able to skip a full scale engineering design, which takes a couple of years.

We would skip that and do a quick design and start pulling sediments out of the lagoon, actually do the action, within at least during the time of the four-month action.

So within six months, say, of the decision to do it, we can get it done if we had the money.

The trick in the past couple of years, unfortunately, with congressional -- with budget cuts, federal budget cuts, is we don't have the money to do all of the actions we need to in the country that have been signed off as we're going to do it, and we're sort of stuck.

MR. BAIER: I do understand that.

BY MS. BAIER

What I'm getting at is, when you start --

MR. TENERELLA: When we start it will be in six months. The five years that I just mentioned is, that in addition to doing the cleanup, after five years we go back and do an investigation again, a mini investigation, to make sure we got it all, that there are no surprises, that the groundwater didn't recontaminate or that something didn't go quite right.

In this site, in addition to that five-year review, we're doing groundwater monitoring from day one. We're including it as part of the action as opposed to even waiting five years to look at it again. Just to keep an eye.

So that if there's something that goes askew from what we don't that will happen, but just in case, we're including some groundwater monitoring in the action.

MS. BAIER: And at that point, do we get a clean bill of health? We can remove our signs, remove our wells

MR. TENERELLA: Right.

MS. BAIER: And at that point, put an end to it?

BY MS. BAIER

MR. TENERELLA: That's always a difficult thing for us to do. Because while we want to keep, especially, teenagers and children who tend to want to play in abandoned areas out, it is alarmist to some people to see those kinds of signs. It's kind of a general call we have to make to try to keep people off the site. A lot of it

MS. DAIER: I haven't been able to use that for the past 12 years. I'd like to use that acre that I have or be able to sell it, you know.

Because I'm not going to sell this -- when this property was sold to me, I inquired about what was happening in the lagoon, I was told there was nothing wrong there at all. And I said, I had four children, I'm coming here, are they going to be healthy? Thank God they are. But --

MR. TENERELLA: You didn't have to wallow in it for years to have a health it's very conservative.

MS. BAIER: There was a lot of spraying going on. And they would get itches and things like that.

MR. TENERELLA: Right.

MS. BAIER: And I would not sell

BY MS. BAIER.

this property knowing that it was -- when you start five years--

MR. TENERELLA: When you sell, you will be able to get a certificate, if you will, of -- sort of a clean bill of health, if you will. Because people will know, if they can accept this, that EPA had been there and had cleaned up the place.

Now, whether they like that idea is another matter. But at least you will have known by then that we will have done something.

MS. BAIER: Is there also a possibility of getting -- since you've done -- moving things around, is it possible to get water tested again?

MR. TENERELLA: It might be. I'll refer to Janet because I don't have the site anymore in terms of following up.

MS. FELDSTEIN: I think -- can't we do that as part of the monitoring?

MR. TENERELLA: Yeah, we might. Yeah.

MS. FELDSTEIN: We can arrange it. After the meeting, make sure you see Paolo and give

BY MR. PETRINO

him your name and phone number.

MS. BAIER: I appreciate that. Thank you.

MR. TENERELLA: Yes, sir?

MR. PETRINO: John Petrino. There were underground storage tanks there, do you know what the capacities of the storage tanks?

(Brief Pause).

MR. PETRINO: There were ten underground storage tanks, do you know what the capacities of the tanks were and what they contained?

MR. TENERELLA: This is referred to TAMS for the details. Do you know offhand?

MS. GIRARD: I don't know offhand what the capacities were. I know that some of the tanks were used to hold some of the heels of the loads that they were carrying.

What was -- the remainder that was left, the residues in their trucks, they would temporarily hold that on site in some of the tanks, but I don't know what --

MR. PETRINO: Would they be below the plain levels?

BY MR. PETRINO

MR. FIDLER: Mr. Fidler. I think there are three different things that you might have found in underground storage tanks based on my recollection, petroleum products like gasoline or diesel or fuel for the trucks, waste oil from changing oil in the trucks, and three, plasticizer heels, as she mentioned. Specifically plasticizers. Okay. And that material was recycled back to Monsanto.

MR. PETRINO: They would come and pick it up?

MR. FIDLER: Or they transported it back. Whatever the case may be, there was some recycling of that material.

MR. TENERELLA: Actually, K&M transported it because they were a transporter.

MS. GIRARD: In addition to that, in the 1995 Removal Action that we did to remove the tanker truck contents, DEP had some concerns with regards to these underground storage tanks, so we did additional sampling of each of these underground storage tanks and found that one did have some plasticizers left in them, so we did remove that.

MR. PETRINO: The tanks are partly

BY MR. PETRINO

removed then, except the water, right?

MS. GIRARD: The tanks are there.

MR. FIDLER: The tanks are still under the ground.

MS. FELDSTEIN: The tanks are there, but they're empty.

MS. GIRARD: For all intents and purposes, there's some small amounts of petroleum products that are

MR. FIDLER: Fuel Oil.

MS. GIRARD: -- that are still in a few of the underground storage tanks. However, EPA, because of a petroleum exclusion that we have, we're unable to remove those contents. So that's something that DEP would be handling.

MR. PETRINO: Will DEP, then, eventually remove all the underground tanks?

MS. PARRA: DEP will be following proper closure procedures concerning the tanks.

I can't say that they're going to remove -- what the removal will be.

MR. PETRINO: Has the area around the tanks been checked for contamination?

MS. GIRARD: Yes.

BY MR. PETRINO

MR. PETRINO: And there was no contamination?

MS. PARRA: But I think, also, two of the tanks we had diesel fuel, and they -- weren't they emptied during the 1995 --

MS. GIRARD: Right, they were. The ones that had either water in them or a very small amount, what's considered RCRA empty, which is, I guess, less than one or two inches of any type of a material in an underground storage tank or any container, that -- that still remains. That was not removed.

MR. PETRINO: But right now, they're still in one tank with some product in them?

MS. GIRARD: There are probably -- I'm not sure as to the number. But there are probably a couple of tanks still on site that have very little amounts of petroleum products in those -- in those tanks.

MR. PETRINO: You have no idea? That's why I asked the capacity of the tanks. It could be 50 gallons, a hundred gallons, 200.

MS. GIRARD: I have to get back to you on that.

BY MR. PETRINO

MR. FIDLER: We did not determine the capacities of the tanks in the RI. It was not part of what was done because -- specifically because the petroleum product tanks are not part of CERCLA.

MS. FELDSTEIN: It sounds like we're not answering your question, and that's -- I just want to say why that is.

We're not answering your question. That's probably because Superfund -- we deal with the Superfund and the Hazardous Waste Program, hazardous waste, sediments of the lagoon, soil contamination, specifically groundwater contamination.

Specifically fuel oil and petroleum products that are covered in underground storage tanks are something more -- congress told us, that's not your job. You're not allowed to deal with that. So we sort of excluded that. That gets deferred to other state-regulated programs that are not dealt with at the federal level.

That's sort of why we're hedging around. So we didn't investigate that possibly -- we didn't do that.

The ones that had the plasticizers in them and the chemicals, we removed.

BY MR. PETRINO

MR. PETRINO: After the contaminants that the federal government will complete with, if there is contamination levels, let's say, by the petroleum product, could the future owners of that site be held liable for that?

MR. TENERELLA: Not under the Superfund because it excludes them, but under the state's underground storage tank program, maybe. But they'll be closing those tanks.

You asked can the tanks be removed. A lot of times, the tank itself is not. It's foam-filled or filled with sand and stabilized that way after the contents are removed. Depends on the type of tank.

So there are a variety of ways, not necessarily excavation of a tank, to stabilize a tank in place that are also allowable under tank closure laws, state laws. But those don't come under Superfund because they petroleum products in them.

They didn't want to have confusion in the federal law. Because there's another law that deals with oil spills that's separate from the Superfund. And in order not to have all this conflict in terms of what goes where, this is exclusive.

Unfortunately, when you have an industrial site with any kind of diesel or fuel oil tank or gasoline, we're held about -- took back from doing anything on that legally

MR. PASCETTA: If you're interested in the property and the issue of the underground storage tanks, the best person to speak to is Mary Lou right there.

Because if the state is going to do something with the underground storage tanks, they'd be the ones to know.

MR. PETRINO: Second question.

You have a school directly across the street which is probably less than three quarters of a mile away.

Has the water in the school been tested?

MR. TENERELLA: We'd have to check the report on that. I think it was a few years ago.

MS. GIRARD: Way back when in 19-- during the initial--

MS. PARRA: 1990.

MS. GIRARD: 1990. I don't remember

BY MR. PETRINO

what date it was, but I'm almost positive--

MS. PARRA: Were you on it at the this time?

MS. GIRARD: Not in 1990.

MR. PETRINO: As a member of the Board of Education, I would like to make a request, if it wasn't tested, could it be tested?

MS. FELDSTEIN: We can look back at the data.

MR. TENERELLA: I hate to promise you, though. But if memory serves me correctly, when were doing the more board of scale study, we were concerned about the school because of its location. And we did the sampling and it came up clean.

Because it was one of the major well -- or one of the major water-used facilities in the area. But I don't want to swear to it without seeing the report myself. I'm pretty sure we did it, but we'll check. And that it came up clean, if memory serves me right.

MS. RYCHLENSKI: Anymore questions?

MR. TENERELLA: Bruce, do you have the--

MR. FIDLER: Yes. I have some

BY MR. RUSSELL

information to kind of follow up with the earlier--

MR. TENERELLA: One more question. I'm sorry.

MR. RUSSELL: My name is Jim Russell. I'm concerned that Joan's water hasn't been tested in five years.

How can you be assured that the Navesink aquifer hasn't gone down into the Mount.Laurel-Wenonah aquifer and right now she's drinking contaminated water?

MR. TENERELLA: Can you describe exactly the dynamics or should we? Of the two aquifers and how they operate together or don't operate together.

MS. PIERCE: There isn't a lot of interaction between the two -- the shallow Navesink aquifer and the deeper Wenonah-Mount Laurel.

The Navesink has a very low transmissivity. It's very tight. And so you don't have a lot flow of the contaminants through that.

In the sampling that we did, there was no evidence, even in the shallow aquifer, that any of that contamination had moved outside.

It was pretty much centralized to the west of the lagoon.

MR. RUSSELL: I really think you're Remedial Action is deficient in not checking the tap water of the people in the area to know --

How do you know there isn't contamination if you don't check it?

You're moving on assumptions.

MS. PIERCE: We--

MR. RUSSELL: You're assuming that there's no contamination in the water. You should get a sample from the tap and test it, and that should be included in your Remedial Action.

MR. FIDLER: Pam, maybe you want to describe how the groundwater moves under the site. I mean, not just the speed with which it moves, and that's the Navesink moves very slow, the Wenonah-Mouth Laurel underneath it moves relatively quickly, but also the direction of that flow. If you want to point out on the map, perhaps

MS. PIERCE: Based on the underground contour that we've measured during the investigation, we found that the groundwater flow is in this direction (Indicating). So it's away from the property.

BY MR. RUSSELL

And based on the wells, there are wells based on this side of the lagoon, that's what we used to establish the fact that there was no contamination.

Although, contamination was moving in this direction, it hadn't moved outside.

MR. PASCETTA: Now, to answer your question--

MR. RUSSELL: That doesn't give me a lot of comfort. I mean, testing it is a quantitative test to know there's no contaminants. You're assuming there isn't any.

MS. PIERCE: We tested the groundwater samples that we took during the investigation.

MR. RUSSELL: It hasn't been tested in five years. You would not know if it's contaminated right now.

MR. TENERELLA: Not right at the moment. But in 1990, 1 guess, we tested the taps when Kauffman was operational. That's a very critical point here.

We tested at a worse case, when he was operating and when he was saturating the lagoon

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and the nearby wetlands with his wastewater. Now we're at the point where he's closed operations for a number of years.

If anything, the situation is going to get drier, basically, and better.

MR. RUSSELL: You're assuming the situation should get better. Why don't you just test the water?

MR. TENERELLA: The assumption is of science. It's not a blind assumption. We sampled individual drinking water wells, including that one, in 1990 because of that concern that we had, too.

MR. RUSSELL: Right.

MR. TENERELLA: They came up clean. All of the test results that we have to date show that the water flows opposite of that direction.

In fact, if something happened there now, quite candidly, because of the flow and the information we have, if you got a problem well, you got a problem and it ain't ours. Because the flow is in the opposite direction, it's not the site.

MR. RUSSELL: Well, why don't you test the people's ground drainage then?

MR. TENERELLA: We have. That's

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fine. And we have looked -- we had the flow of the waters -- you're sensing this plume like it's very as opposed to the fact that the upper aquifer is tightly located on the site, and the lower aquifer, which you all drink out of if you have private wells in the area, has been tested clean all along.

It just shows that there's a pocket -- a very low nothing flow pocketed on the site versus the higher. And just to make sure, we're going to monitor some more.

MR. RUSSELL: For the cost of doing the test, you should do it.

MR. TENERELLA: That's what we're going to do. It's part of the remedy.

MR. RUSSELL: And another thing is, it takes a year for her to get the results after you make the test. I mean, I think a couple of weeks

MR. TENERELLA: Well, it takes a while to take the test, get them to a 1ab, certify the results, do a QA-QC on the results.

We just don't go out and take your sample and then the next thing they come back with the test results. It does take a while.

MR. RUSSELL: I think a year is

long.

MR. TENERELLA: It shouldn't take quite that long. No, I agree with you there. it should have been months. Months, yes, but not years.

MR. RUSSELL: And I'm sure the cost of doing these last tests, it would -- I think it will-be well worth and should be part of your remedial plan. It's not that

MR. TENERELLA: We'll see that in the record so we can assess that before we go to our final decision.

Your concerns are certainly legitimate I don't want to mean that they're not.

MS. STEVENSON: You pointed the flow in that direction (Indicating). Is that towards the school?

MR. MILLER: That's towards -- right up near my house.

Are these wells going, to be tested every year now? I mean, it's flowing right towards my house.

MS. GIRARD: Yes, they will.

MR. TENERELLA: Again, don't misinterpret the word "flow". I mean, we're talking in a very slow rate of movement.

MR. MILLER: I'm on the corner. This is towards the back. I mean, I don't expect to come right to my house.

MR. BRUCE: Show us where your house is.

MR. MILLER: Right on the corner of 537 and Jobstown-Juliustown Road.

MS. PIERCE: Right here (Indicating). Okay. This flow is upstream. The water is moving in this direction (Indicating). It's not moving in this direction. You're not downgrading

MS. GIRARD: And there are clean wells that separate those -- between that.

MR. SPEAKER: So the water goes this way and not

MS. PIERCE: It flows in this direction (Indicating).

MS. STEVENSON: Would you consider the knowledge on the flow of water an exact science or are there some variables, like water draw can reverse the way it's flowing and other considerations have to be made?

If you have a large draw on water, it can reverse the flow if there is one.

MS. PIERCE: If you have a very large local well, very large local well, drawing water you can have -- it can have a radial inward flow within a small area around that well. But there is no incidence of that in this case. And the water flow is governed by the geology of the area of it.

MR. FIDLER: And it's a regional phenomenon.

MS. PIERCE: It's regional, it's not site related.

MR. MILLER: Does the state own the property now?

MR. TENERELLA: No

MR. MILLER: Who exactly owns it?

MR. TENERELLA: The Kauffman family. And I guess there's a lien on it for nonpayment of taxes or something. Basically, it's the Kauffman family.

MR. MILLER: And then it put into a sheriff's sale, I guess, or

MR. POINSETT: Please identify yourselves so that the lady can get a record.

Mayor Poinsett?

MS. FELDSTEIN: Ron Miller asked the initial question.

MR. POINSETT: The Township has a tax certificate to the property. They didn't pay the taxes. They filed bankruptcy and it's in the courts.

MR. TENERELLA: Our assumption, from EPA's standpoint-as a policy all the time, as the sites get cleaned up, and if they're sort of an abandoned 'property, then it would be put back to public reuse.

MR. POINSETT: The Township is interested in -- the state passed the law identifying the municipal governments, that they pick up the site. Because, quite frankly, they're off the tax roles. And if the Township residents can get some use out of the property, it's not a health risk, we would try to utilize that.

MR. TENERELLA: It's certainly one of our motivations in trying to get cleanups done quickly so--

MR. POINSETT: There's a lien on it as of right now. I'm sorry to interrupt you.

MS. RYCHLENSKI: Anymore questions,

comments.

MR. FIDLER: In the report, Table 4-2, if you would like that information, provides the groundwater MCLs.

MR. TENERELLA: I just want to obviate. If you would like to come by after the meeting is formally over and have some other questions that you might want to inquire of our consultants or the EPA staff, by all means, we'd be happy to talk to you after the formal part of the meeting is over.

MS. RYCHLENSKI: Anymore questions or comments? Going once, going twice. Do I see a hand in the back? Okay. Your name, please.

MS. DOROFACHUK: Jane Dorofachuk.

Since the size is not too bad, exactly when is it going to be taken care of?

MR. TENERELLA: We are not sure at the moment. It depends on the availability of funding.

Because the cost is relatively low relative to other sites in the country, if there is some money available, say, at the end of this year or early next year that we can get for the site we're transferring the site to Paolo and Janet there. We've already talked about a hope to maybe get some money to get this particular site cleaned up because it's not going to cost that much.

But money is a big question for us now. And the priorities are how -- have heavy health risks sites nationally. So all sites nationally going on this large Priority List now. And then they take them off the top in terms of risk, in terms of what was funded for cleanup.

Kauffman's is going to probably be pretty low because the risks are not high. And so it may have to wait awhile to get funding for cleanup.

We also have -- Superfund was never re-authorized. The legislation we worked under was supposed to be re-authorize last year and this year in those congresses. And because of other legislation, they haven't gotten to it yet.

So it won't happen, now, until the next congress from the time that we are -- it will be another year before we get re-authorized with a lot of new money, if at all. Depending on what they're giving.

So right now we're in sort of a

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continual resolution where congress gives us "X" number of dollars to operate as much as we can with, but it's not sufficient to do everything. We're in a little bit of a bind for now.

MS. DOROFACHUK: And if nothing happens in a year's time or a year and-a-half, to whom shall I write?

MS. RYCHLENSKI: You should exercise your constitutional right that is given to you by our, forefathers, and I would suggest that you get in touch with your elected representative since they're the ones that have the power of the vote on the hills. Make some ruckus. You're a citizen, it's your right.

MS. STEVENSON: I'd like to point out a discrepancy between this and the report. And I asked the question earlier about the Navesink and how many people have wells? You said probably, two.

This ones says, a well survey performed within a five-mile radius. No drinking water wells were installed in the Navesink.

MS. GIRARD: That's correct.

MS. STEVENSON: And here it says, some individual homeowners may have placed wells in the shallow Navesink.

MS. GIRARD: Right. They're not drinking water wells.

MS. STEVENSON: Well, what are they doing with it?

MS. TENERELLA: Irrigation, crop irrigation, or animal we're not sure because we weren't able to find--

MR.. FIDLER: There's a important distinction to be made, too. And that is that a well search, where we go to the Department of Environmental Protection and do a search of their records, would only turn up those wells which actually have permits for them. And those are wells --

The state requires that any well that's dug in the state or drilled, and that's been true for many years, has to have a permit.

There are some wells in the -- very shallow, that are not in those records. And those were turned up through other means of surveying the area. Okay.

But there is no information on those wells that says whether they're in the Navesink or

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whether they go down through the Navesink to some
other -- to the formation below.

MS. STEVENSON: It wouldn't be hard
for you to find out if they're shallow wells.
Really, that's a shallow well, right?

MR. TENERELLA: Sure. Somebody
could dig a hole in their back yard, we wouldn't
know. And that's a well.

MS. STEVENSON: If you turned up one.
that was a older home and it was a question, that
shouldn't be that hard to find out.

MR. TENERELLA: Well, because of the
nature of the well, as we mentioned before, in this
situation, in the shallow aquifer, somebody could dig
a shallow well and say, wow, I got free water.
That's why people don't want their wells done,
because they don't want to -- you know, there's some
charges and stuff sometimes.

But let's say they dig, a well,
theoretically, and take the water out of the lower
aquifer, they won't go to drink it. It's
undrinkable. The animals won't even drink it. Just
this particular aquifer is naturally nasty, a high
iron content, muddy.

BY MS. STEVENSON

But the deeper aquifer isn't all that far down either. You don't have to go 200 feet to get drinkable water in this area. So it's a very -- it's not a motivation to steal the water from the lower aquifer when you can drill a few feet more and get good, clean water.

So that's why we don't see such a problem here, that we're aware of. I mean, someone could be doing it, but I don't know why they would. It would not be rational to do it, let's put it that way.

MS. STEVENSON: That's my concern. The persons who might not be aware that they're in a shallow aquifer and are

MR. TENERELLA: But they wouldn't use it. Would you use muddy, smelly water, even for washing?

MS. STEVENSON: Is it muddy and smelly? Because some of the statements in your reports indicate that it's possible to be potable. From the report the way it's written.

MR. TENERELLA: Potable water -- how do I describe this one. Potable water can have a high iron content. It's potable. It's safe to drink it, but you wouldn't want to drink it because it wouldn't taste right.

MS. STEVENSON: You have this with your deep wells. You have a lot of iron in a deep well, but it's good water.

MR. TENERELLA: Yeah, if it has a filter or whatever. But it's not a dangerous. It's not a public health issue. It's an issue of--

Actually, we have something called Secondary Aesthetic Levels which includes high iron content, odor, turbidity, things like that, that we can also monitor for. But it's not a public health threat, it's more of an aesthetic threat. It's just not pleasant.

And that's why, as I say again, in a shallow aquifer like this, when you have accessible drinking water so close below it, relatively close, that you don't have to go down a hundred feet or so, there's no rational need for anyone to dig a well into that shallow aquifer and none that we are aware of.

MS. STEVENSON: If when you check the area of Springfield Township -- I know for a fact that there are older homes, not necessarily this area, there are shallow wells and they're using them.

MR. TENERELLA: Site specifically, in looking for things, we could not find them. That's all we can say.

MS. GIRARD: And Ann can answer -- give some additional information on that at that time.

MS. RYCHLENSKI: We went door-to-door because a lot of the people that are here in this room, Ms. Bice and Ms. Joan Baier and Jake Coulter.

In fact, Jake Coulter, we got down under his crawl space, and our water sampler had to hang dowry into the well while I held her feet under his crawl space.

And I just know from what we remember that a lot of people here complained about the iron taste of their water. A lot of people have softeners. We had to take them off and take the tap samples.

But we did a lot of sampling in this area. We went all the way around the perimeter of the site and did tap samples. And I don't know of anybody that was into the shallow aquifer.

And a lot of those were very old homes. I know Joan Baier's home is old. I know Jake's home is old. And I don't know of anybody that I was at. And we tried to get to as many people as we could and we really looked around the area.

MS. GIRARD: We also left letters, too. We have people responding to it, asking them how deep their well is; do they drink their the water out of that well; is it a privately dug well?

All of this information that was then returned to us for the people that we didn't contact.

MS. RYCHLENSKI: And there was no one that I saw that was into the shallow aquifer, and those included some very old homes. And that was close to the site, Monmouth Road, Jobstown-Juliustown Road, Sailor's Pond, that whole area.

MR. TENERELLA: Any other informal questions for the record, comment?

(No Response).

MR. TENERELLA: We certainly -- this does not obviate written comments, if you'd like, during the comment period. You can send us written comments at any time during the 30-day open comment period. And those will be reviewed and responded to also, and our Responsiveness Summary goes along with the Record of Decision.

Thank you all for coming.

MS. RYCHLENSKI: Okay. The only last thing I want to say is, if you didn't sign on the sign-in sheet outside, please do so.

Please print I beg with everybody, to please print so I get your name straight. And also, put your full address with the zip code.

And if you want to do any written comments, make sure you have one of these to refer to. Okay.

And thanks a lot.

(Whereupon the meeting was adjourned at approximately 8:30 p.m.)

C E R T I F I C A T E

I, MIRIAM RIOS (License No. X102031), a Certified shorthand Reporter and Notary Public of the. State of New Jersey, do hereby certify the foregoing to be a true and accurate transcript of my original stenographic notes taken at the time and place hereinbefore set forth.

<IMG SRC 0296278P>

Dated: August 12, 1996.